NOVEMBER | 1957

products finishing

FINISHES ON METAL PRODUCTS

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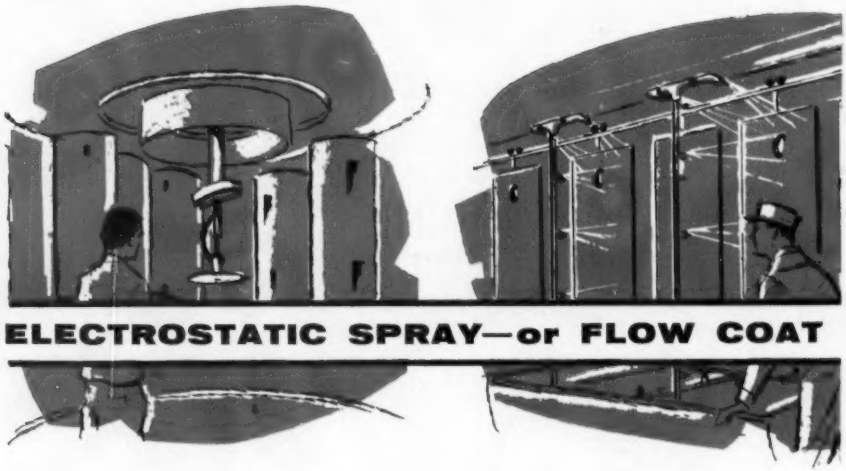

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Adjustment of formulations is as important as adjustment of equipment, in getting full benefits from either electrostatic or flow coat installations.

With industry-wide experience in these as well as other processes, Sherwin-Williams is equipped to supply the finishing materials and the technical service needed to adjust solvent balance, viscosity level and other factors to the needs of the installation.

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4	20	36	52	68	84	100	116	132	148	304	317	333	349	365	381	397	413	429	445
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14	30	46	62	78	94	110	126	142	158	314	327	343	359	375	391	407	423	439	455
15	31	47	63	79	95	111	127	143	159	315	328	344	360	376	392	408	424	440	456
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12	28	44	60	76	92	108	124	140	156	312	325	341	357	373	389	405	421	437	453
13	29	45	61	77	93	109	125	141	157	313	326	342	358	374	390	406	422	438	454
14	30	46	62	78	94	110	126	142	158	314	327	343	359	375	391	407	423	439	455
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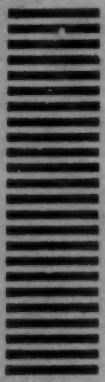

Your Monthly Source For Finishing Ideas

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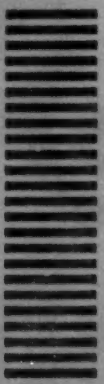

These Oakite shortcuts speed your metal cleaning

1. Cleaning and rustproofing
—*in one washing operation.*

Oakite Composition No. 98 (used cold or hot in one-stage or two-stage washing machines) quickly removes cutting oils and chips and leaves a thin film that protects steel against rusting between operations or during temporary storage.

Excellent for cleaning before inspection: the metal is cool for immediate handling and the film (too thin to affect measurements) prevents finger prints from corroding highly finished surfaces.

One auto manufacturer uses No. 98 in seven plants for cleaning and rustproofing brake cylinders, camshafts, connecting rods, crankshafts, cylinder heads, flywheels, push rods, tappets, wrist pins, etc.

2. Stripping pigmented paints
—*with no need for pickling before repainting.*

Oakite Rustripper saves money in paint shops by doing a complete stripping job in one operation. It eliminates extra pickling and neutralizing to remove the metallic pigments, phosphate coatings and rust that prevent successful repainting.

A television manufacturer says "We formerly took 25 minutes to strip rejected cabinets, then had to pickle to remove tarnished phosphate coatings. Today 10 minutes in Rustripper strips the same cabinet so bright and clean you can't tell it from new. Eliminates pickle, neutralize and rinses."

An auto parts maker uses Rustripper for continuous conveyor line stripping. "Cycle of 1 minute and 50 seconds works like a charm stripping paint and incidental rust from rejects and hooks."

FREE For full information write for booklets:
1. "*For Power Washers—Oakite Composition No. 98*" or
2. "*Here's the best shortcut in the field of organic finishing.*"

Oakite Products, Inc., 20 Rector St., New York 6, N. Y.

OAKITE

Export Division
Cable Address: Oakite

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LOOK AT THESE ADVANTAGES OF

IRIDITE® FINISHES

for

CORROSION-RESISTANCE, PAINT BASE ON ALUMINUM AND MAGNESIUM

TYPICAL APPLICATIONS

Aircraft and Missile Parts

Automobile Hardware

Outdoor Furniture

Communications Equipment

Marine Equipment

EASE OF USE—Iridite is a simple chromate conversion treatment. Fast, easy, economical. Dip, brush or spray it on at room temperature. No special equipment. No specially trained personnel.

OUTSTANDING PERFORMANCE—Integral film can't flake, chip or peel. Takes paint firmly on initial application, and the bond lasts. Even protects areas scratched in use.

LOWEST COST—You have only minimum equipment cost, no special racks, high speed operation, lower overall handling costs.

CHOICE OF APPEARANCE—Clear coatings that retain metallic lustre to dark, maximum protection coatings. Dyes available, too.

IRIDITE #14 and #14-2 (Al-Coat) for ALUMINUM—Both provide excellent corrosion protection and paint base. Iridite #14-2 is an improved product that allows greater flexibility in operation and coating thickness and produces the optimum in corrosion protection. Either coating provides corrosion resistance superior to complicated electrolytic treatments in a fraction of the time. These coatings also have low electrical resistance, aid in arc-welding, provide a good base for bonding compounds, have no effect on the dimensional stability of close-tolerance parts. Choice of appearances ranging from clear through yellow iridescence to full brown. Red, green, blue, orange or yellow dyes available.

IRIDITE #15 (Mag-Coat) for MAGNESIUM—Produces a protective, paint base film with corrosion resistance at least equal to long, high-temperature dichromate treatments in a fraction of the time and at room temperature. Appearance can be varied from light brown to dark brown and black.

APPROVED UNDER GOVERNMENT AND INDUSTRIAL SPECIFICATIONS

SEE FOR YOURSELF WHAT IRIDITE CAN DO . . . SEND SAMPLE PARTS FOR FREE PROCESSING. Also write for handy Reference File on iridite chromate conversion coatings. Or, for immediate information, call your Allied Field Engineer. He's listed under "Plating Supplies" in your classified phone book.

ALLIED RESEARCH PRODUCTS
INCORPORATED
4004-06 E. MONUMENT STREET • BALTIMORE 5, MD.

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West Coast Licensee—L. H. Butcher Co.

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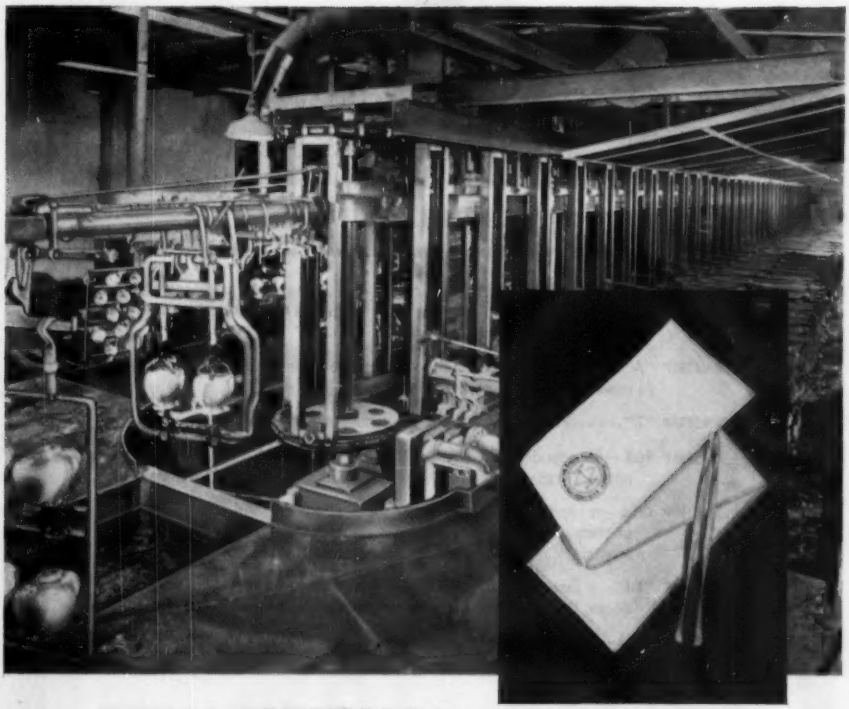

WHY H-VW-M ANODE BAGS
CAN CUT DOWN PLATING ROOM REJECTS

Everything that goes into the plating bath has some effect on the finished product. And, when you think about it, nothing can have a more *direct* effect on plating results than the bag that holds the anode. You may use the finest chemicals . . . the best anode stock. Yet the job can be ruined by harmful chemicals in the bag material, or made less efficient by a bag of inadequate design.

THAT'S WHY IT PAYS to get H-VW-M anode bags. They cost no more, yet each is designed like a fine tool . . . engineered to give top performance in *specific* plating operations. This fine quality and precise engineering pays off in faster work, finer finishes—and fewer rejects.

Look for these features when you buy anode bags. You get them *all* with H-VW-M.

- **Wide selection of materials.**
- **Laboratory and field electrochemical service.**
- **Completely desized and pre-shrunk fabrics.**
- **No organic impurities of any kind.**
- **Minimum wear . . . longer life.**
- **Low, competitive price.**

MADE ONLY OF LABORATORY-TESTED MATERIAL

You can be sure that every H-VW-M anode bag you buy is free from any matter which can prove harmful in the plating process. In modern H-VW-M laboratories, experts in plating chemistry constantly test anode bag materials under actual shop conditions. Only the purest pass these rigid tests.

For diaphragm operation – H-VW-M can supply you with equipment to meet your needs. Write today for further information and prices.

Hanson-Van Winkle-Munning Company, Matawan, New Jersey. Offices in principal cities.

H-VW-M

Industry's Workshop for the Finest in Plating, Anodizing, and Polishing Processes · Equipment · Supplies

PLATEMANSHIP—Your H-VW-M combination—of the most modern testing and development laboratory—of over 80 years experience in every phase of plating and polishing—of a complete equipment, process and supply line for every need

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ENTHONE

Which metal do you want to strip?

There's an Enthone metal stripper for most applications:

☐ **ENSTRIP "S"** — an additive for sodium cyanide solutions used to dissolve nickel, copper, gold, silver, zinc, cadmium and alloys of these metals from steel without attacking the base metal in any way.

☐ **ENSTRIP "A"** — a fully-prepared alkaline mixture already containing sodium cyanide, used for the same purpose as Enstrip "S".

☐ **ENSTRIP "Z"** — an alkaline stripper that rapidly strips zinc from steel.

☐ **ENSTRIP 103** — an economical, alkaline electrolytic stripper for removing nickel, copper, brass, zinc, silver, gold, cadmium, tin and lead from steel.

☐ **ENSTRIP CR-5** — a rapid, acid-type dry salt stripper that dissolves heavy deposits of chromium from steel, nickel, copper base alloys, stainless steel and aluminum.

☐ **ENSTRIP "T-L"** — a fast-acting, dry alkaline stripper for dissolving tin, lead, solder alloys, tin-zinc alloys and zinc from steel base metals.

☐ **ENSTRIP 165S** — a neutral dry-additive for acid solutions for quick removal of nickel, tin, lead, zinc, cadmium, iron and aluminum from copper and copper base alloys.

☐ **ENSTRIP L-88** — a completely prepared acid electrolytic stripper for removing copper, nickel, chromium, brass, bronze, iron and white brass from zinc-base die castings.

These eight outstanding strippers are "stock" items in the Enthone line of chemicals for the metal finishing and electroplating industries. In most cases, one of the "Enstrips" will prove to be the answer to your problem. On the other hand, special developments are available from Enthone to meet requirements not covered by the Enstrips featured above. Write us, outlining your needs, and include a sample of your product, if possible. We'll be glad to recommend the best stripping method possible.

Write to Dept. PF-11

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PRODUCTS OF *Enthone* THE SCIENTIFIC SOLUTION OF METAL FINISHING PROBLEMS

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INCORPORATED
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Metal Finishing Processes • Electroplating Chemicals

SUBSIDIARY OF AMERICAN SMELTING AND REFINING COMPANY

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products finishing

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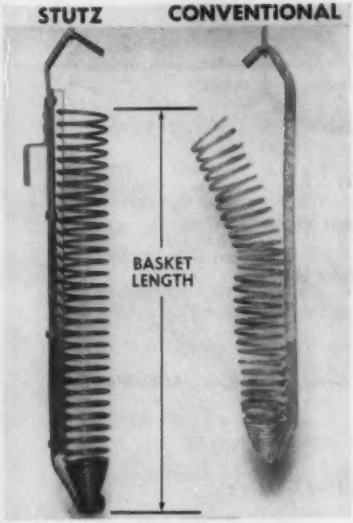
STUTZ

BALL ANODE CONTAINER
NEW CONSTRUCTION
FOR LONG SERVICE



STUTZ CONSTRUCTION — Heavy gauge steel with wire woven through steel angle firmly attached to main stem. Cannot come apart or loosen. Side clip is for STUTZ BARREL PLATING TANKS having submerged rectangular anode bars. Side clip not furnished for racked plating tanks. Standard hook 6 inches. Other hook lengths furnished in quantity of 100 or more.

WELDED CONSTRUCTION — Note how welds have dissolved or broken in use. Often caused in barrel plating where currents are high and barrel transfer is rapid.

PRICES—11 cents per inch for basket lengths 18 inches or longer. Increments 3 inches. Curved containers 15 cents per basket additional.

Serving Industry 35 Years

THE STUTZ CO.
4410 Carroll Ave., Chicago 24, Ill.

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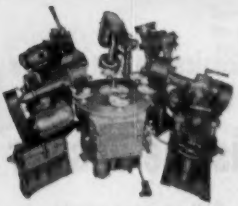
★ ★ ★

Circulation over 21,000—largest in the finishing field



Hammond Automatic Deburring Machines will increase production, assure a uniform finish, reduce operator fatigue and save floor space.

Send sample parts for complete engineering report.

Hammond Machinery Builders INC.

1622 DOUGLAS AVE. KALAMAZOO, MICH.

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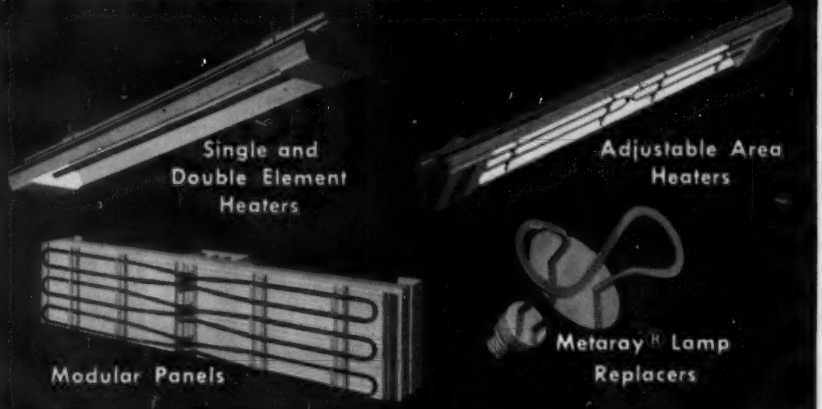
FAST uniform heating ... dialed to your exact need

CHROMALOX *Electric Far-Infrared*



Isn't this the heat you need?

Fast . . . up to 75% faster than convection

Uniform . . . no over- or undercuring

Color-blind . . . absorbed almost equally by all colors

Clean—safe . . . no fumes, no flames, no glare

Accurately controlled . . . with infinite number of settings to match different jobs

Unbreakable, all-metal, maintenance-free

Easy and economical to put on the job

Chromalox Electric Far-Infrared is the answer

CHROMALOX FIRST NAME IN ELECTRIC HEAT

FREE BULLETINS for each type heater. Tell us your needs and we'll give you specific recommendations. Write today.

C-2107

Edwin L. Wiegand Company

7522 Thomas Boulevard, Pittsburgh 8, Pennsylvania

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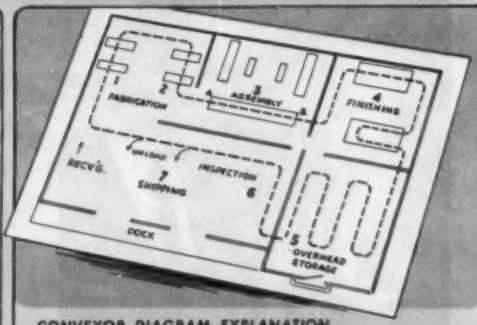
CHAINVEYOR

A MONTH AGO YOU COULDN'T HAVE ELBOWED YOUR WAY THROUGH THIS AISLE!
TWICE THE ROOM IN "SHIPPING" TOO, SINCE CHAINVEYOR AUTOMATIZED THE PLANT - AND LOOK AT THAT INSPECTION OPERATION MOVE ALONG!

This complete **CHAINVEYOR** installation immediately speeded operations in all departments! It conserved valuable floor space, saved man-hours, lowered handling costs and increased production rates. The system moves parts rapidly from assembly through processing, inspection, and storage to shipping — with a minimum of manual handling!



CONVEYOR DIAGRAM EXPLANATION

FABRICATION

1. Machine operator loads conveyor at completion of first process.
2. Chainveyor carries parts overhead to next step, unloads automatically, operator hangs piece on conveyor at convenient dip section.

ASSEMBLY

3a. Traveling quickly up and over the aisle Chainveyor discharges parts at start of assembly table.

3b. At the completion of assembly, the checker loads without moving from the work station.

FINISHING

4. No manual handling in this whole department as parts travel through painting and drying, rotating when necessary, cooling on the conveyor while traveling.

OVERHEAD STORAGE

5. Any amount of "live" storage can be provided, freeing important floor space for other operations.

INSPECTION

6. Parts are continuously checked without laborious lifting or lost motion while on Chainveyor.

SHIPPING

7. Completed assemblies are transported to the final destination, reducing handling cost and increasing efficiency.

Send for your *PLANNING FOLDER*

Illustrated catalogue and complete details

by circling your reader service card.

You receive:

- *A handy file folder for keeping materials handling information.*
- *Special illustrated catalog with proven applications, details and representative users.*
- *Explanatory diagram illustrating a typical Chainveyor layout showing component parts.*
- *Plant and conveyor planning grid sheets for preliminary layouts.*

QUALITY OVERHEAD CONVEYOR SYSTEMS

CHAINVEYOR®

CORPORATION

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DU PONT PRODUCT NEWS

REG. U.S. PAT. OFF.

New Du Pont cost-analysis method helps you save money two ways

• Du Pont's exclusive cost-analysis method can help you cut cleaning costs or help you choose the best cleaning process for your needs. This new service is now available at no cost or obligation.

Du Pont and its distributors of "Triclene" D trichlorethylen now offer an accurate method for analyzing all costs involve in metal cleaning. This new Du Pont service can save yo money by helping you (1) determine where present cleanin costs can be cut, or (2) choose the most efficient cleanin process if you're expanding or planning a new installation.

Du Pont's exclusive cost-analysis method combines 20 yea of metal-cleaning experience with proven cost-accounting pr cedures. The result is a simplified and thoroughly reliable w to compare all costs of various cleaning processes or of alte nate methods of handling your present cleaning operation.

Du Pont's cost analysis gives you a *complete* cost pictu and doesn't stop with the obvious, and usually misleadin cost factors such as equipment, solvent or chemicals. You'll able to answer any question about your cleaning costs co fidently and instantly spot those that are out of line.

Du Pont, or its distributors of "Triclene" D, will be glad give you full details. Whether it's cutting costs, improvi your present cleaning results or trying to decide which cle ing process is best for you—you can get accurate answ using Du Pont's proven cost-analysis method. Use the coup for prompt attention.

• Conveyorized vapor-degreasing unit cleans oil, grease and chips from machined aircraft cylinders.

Why vapor degreasing with "TRICLENE" is ideal for assembly-line cleaning

It's fast—Vapor degreasing with "Triclene" D removes grease, cutting compounds and other contaminants—usually in less t a minute!

It's thorough—Vapor degreasing with "Triclene" D leaves p clean and dry—instantly ready for the next operation; never ca etching or staining—leaves no deposits of any kind.

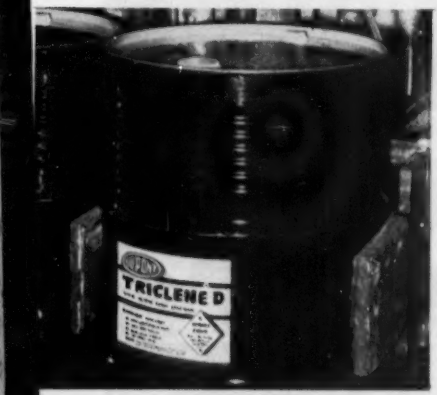
It's versatile—Vapor degreasing with "Triclene" D will clean p made of all common metals and alloys, in any size or shape.

It's economical—Vapor-degreasing equipment is compact and expensive to install. Parts come out dry, eliminating need for dr —saves valuable floor space. Superior cleaning action of "Tricl D eliminates rejects, cuts downtime.

It's easy to operate—Anyone can do it. In fact, vapor degre can be run automatically. Du Pont will be glad to provide inst tions for proper operation of your vapor degreasers if you wis

▶ If you would like to know more about degreasing, or wa be sure you're getting the most efficient cleaning from present degreaser, call your Du Pont "Triclene" D distrib if needed, he can call in one of Du Pont's metal-cleaning exp You can also contact any Du Pont district sales office or us coupon at right.

FOR MODERN METAL CLEANING



Du Pont's combination of neutral stabilizers makes "TRICLENE" D THE BEST BUY IN DEGREASING SOLVENTS

t's a proven fact that "Triclene" D trichlorethylene gives brighter, stain-free cleaning; keeps degreaser coils free of sludge, thus reducing costly downtime and maintenance roblems from clean-outs. All of these advantages can be raced to the unique combination of *neutral* stabilizers resent in today's "Triclene" D.

Developed by Du Pont research, these stabilizers guard gainst attack from any deteriorating influences that may involved in cleaning today's common metals and alloys. s a result, acids—formed by metals such as aluminum, by contaminants such as oil, grease and cutting com- unds—have no harmful effect on "Triclene" D's clean- g action. You get more mileage from "Triclene" D . . , put another way, you need less solvent to do the eaning job when it's "Triclene" D.

Here's another economy feature. The neutral stabilizers "Triclene" D are locked in and can't escape during dis- llation. Result: "Triclene" D is just as good after distilla- n as it was when Du Pont shipped it to you.

Experience in hundreds of metalworking plants has oved that "Triclene" D is the best buy in degreasing ivents. If you would like to prove it in *your* degreasing eration, just call Du Pont, any distributor of "Triclene" or use the coupon below.

Your distributor of "TRICLENE" D— *a good man to have on your team*

Take inventories, for example. Think how much more of a problem they would be if you couldn't just call your distributor and get whatever supplies you need, where and when you need them. This applies not only to "Triclene" D, but to all of the other products he stocks locally for your convenience. But just one call from you—sometimes at the last minute—and you get the materials you need to keep production lines rolling. This convenience extends to your bookkeeping, where a single invoice can cover all of the different products you order.

More important perhaps than any of these valuable services is your distributor's local interest in you and your company. As an active member in your community, he takes care to provide you with quality products and any technical service that may be needed. If a difficult metal-cleaning problem develops, for example, he can call to your aid one of Du Pont's technical men. And it doesn't have to be a problem—he'll be glad to bring in an expert just to talk over any new ideas or plans you may have for expansion. Such meetings can often save you time and money.

Your distributor of "Triclene" D is a storehouse of valuable information, too. Manufacturers of the many products he represents keep him posted on new developments. He is always glad to share his information and provide you with useful literature. Think about the number of ways your distributor of "Triclene" D can help you—then give him a call. You'll find he's a good man to have on your team.

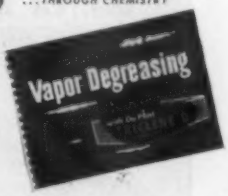
* * *

DID YOU KNOW 7 degreasers using "Triclene" D went two years without the need for a clean-out for a leading aircraft company? Striking proof of the stability, purity and dependability of this rugged solvent.

DU PONT
REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
...THROUGH CHEMISTRY

FREE VAPOR-DEGREASING BOOKLET tells you how vapor degreasing works, shows types of equipment, points out many cost-saving advantages. Just mail the coupon below for your copy.



ELECTROCHEMICALS DEPARTMENT
Chlorine Products Division

E. I. DU PONT DE NEMOURS & CO. (INC.)
Wilmington 98, Delaware

☐ Please send more information on your new cost-analysis method. PF-11
☐ Please send me your booklet on vapor degreasing.
☐ Please have your representative call for an appointment.

*Name*_____ *Position*_____
*Present method of cleaning*_____
*Firm*_____
*Address*_____
*City*_____ *Zone*_____ *State*_____

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CUT COSTS SAVE TIME IMPROVE QUALITY

use **CRATEX**

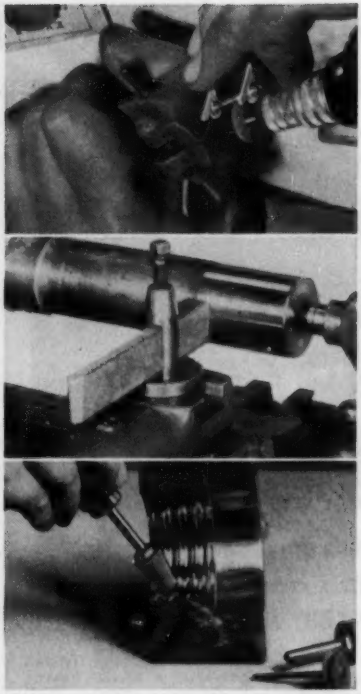
Rubberized Abrasives

for MICRO-DEBURRING, SMOOTHING, CLEANING, POLISHING on HARD or SOFT METALS and other materials

4 grit textures

Course — C • Medium — M
Fine — F • Extra Fine — XF

WHEELS • POINTS • BLOCKS STICKS • CONES for power or manual application and dimensional control. **CRATEX** is sold through leading industrial supply distributors.



For actual field application reports on how **CRATEX** "cushioned action" can cut costs in your own operations, send this coupon.

CRATEX MANUFACTURING COMPANY
81 NATOMA STREET, SAN FRANCISCO 5, CALIFORNIA

● Please send Catalog and **CRATEX** Application data for:

Name .....
Title .....
Company .....
Street .....
City ..... Zone ..... State .....

- ☐ Stainless Steel
- ☐ Aluminum
- ☐ Brass & Bronze
- ☐ Cast Iron
- ☐ Heat-treated Steel
- ☐ Special Alloys

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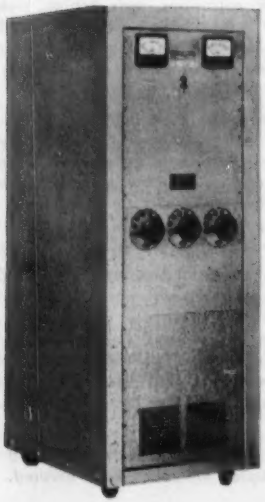
CUSTOM ENGINEERED RECTIFICATION

priced to compete with ordinary mass-produced equipment!

Sel-Rex GERMANIUM • SELENIUM RECTIFIERS



Thousands of Custom-Engineered Sel-Rex Rectifiers provide millions of amperes to a long list of some of the world's most prominent concerns. This list includes the country's foremost electrical and electronic concerns* — companies best qualified to evaluate rectifier equipment — who repeatedly specify and install Sel-Rex.

Such recognition is not the result of "blue sky thinking" or "gimmick" models or lines... it is the result of delving into cold, hard engineering facts and coming up with the right answers for our customers.

Each Sel-Rex installation represents rectifier equipment *custom-engineered* to fill a specific requirement — no razzle dazzle. Let Sel-Rex custom-design rectification to suit you... it costs no more than ordinary, mass produced equipment—in the long run, it will cost far less.

*Names on request

Rectifier Division

SEL-REX CORPORATION

Dept. PF-11 — NUTLEY 10, NEW JERSEY

Offices: Detroit, Chicago, Los Angeles

Sel-Rex

Manufacturers of Exclusive Precious Metals Processes, Metallic Power Rectifiers, Airborne Power Equipment, Liquid Clarification Filters, Metal Finishing Equipment and Supplies.

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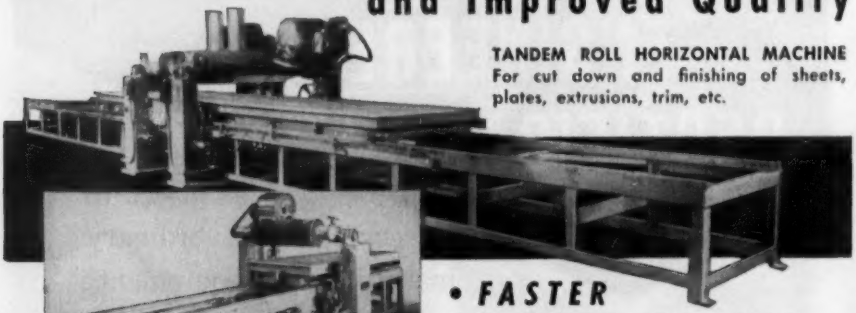
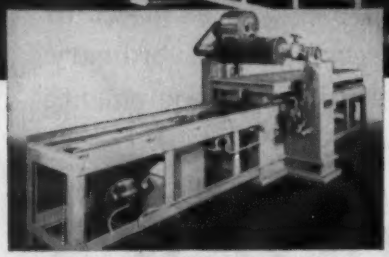
CENTRAL Polishing Machines

Pay Big Dividends in Time Saved and Improved Quality



TANDEM ROLL HORIZONTAL MACHINE
For cut down and finishing of sheets, plates, extrusions, trim, etc.



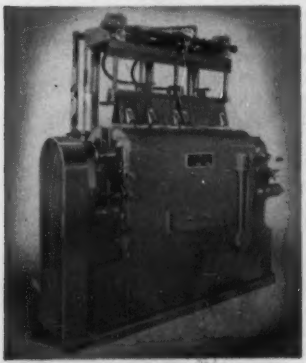
SINGLE ROLL HORIZONTAL MACHINE
Hydraulically operated, with patented hydraulic contour device. Tables on all machines may be oscillated sidewise.

- *FASTER*
- *MORE EFFICIENT*
- *ECONOMICAL*

For cutting costs, improving quality and speeding up your finishing operations on sheets, plates, extrusions, rods, tubing, auto trim and many odd-shaped pieces, Central Polishing Machines will meet every production requirement as they have done so successfully wherever they have been installed.

Horizontal Machines are built in single and tandem roll models, 30", 40" and 50" widths, in any length. Are hydraulically or electro-hydraulically operated from a central operator's station and equipped with our patented hydraulic contour control. Stroke adjusted from 2" to full capacity in stepless increments. Tandem rolls permit cut down and finishing operations with one set-up.

Vertical Machines are available with 18" or 36" stroke. They are fast, economical and easy to operate. Patented hydraulic contour device permits finishing many different shapes such as hardware items, handles, cutlery, auto and appliance trim, escutcheon plates, etc. Central Vertical Machines may be set in batteries where a sequence of operations is desired. Conveyor systems and fixtures can be furnished.



VERTICAL POLISHING MACHINE
2 sizes, 18" and 36" stroke. Hydraulic contour device. Gives a high finish to many odd-shaped pieces.

Write for full information or send us samples of work to be finished.

CENTRAL MACHINE WORKS
74 Commercial St. Tel. PL 6-1500 Worcester 8, Mass.

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now more lustrous than natural

Pearl *essence*

To the pearly beauty of Nacromer we've now added more lustre – in fact, new Nacromer YNC is equal to or more lustrous than the finest grades of natural pearl essence.

AS EASY TO USE AS EVER

Brush, spray, or dip – whatever method of application you use, Nacromer YNC requires no additional labor or equipment. Simply add a small amount to your regular coating material–that's all there is to it!

STILL LOW COST

It takes such a small quantity of Nacromer YNC to create a unique finish that the added cost for your product is negligible. And, Nacromer YNC is versatile too! You can use it on any sealed surface–wood, metal, plastic, leather, paper, etc.

NEW NACROMER YNC

Yes, new Nacromer YNC will give your product more sales appeal, a richer look. Why not see for yourself how this beautiful "more lustrous than pearl" Nacromer YNC can help you? Write today for additional information. (Please specify nature of the coating vehicle used.)

the Mearl corporation

"World's Largest Producers of Pearl Essence"

124 East 40th Street, New York 16, N. Y.

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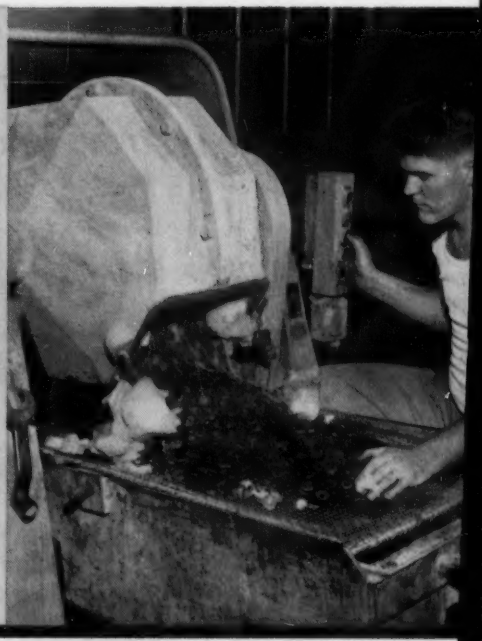
Four Different TUMBLEX* Abrasives assure best possible results in barrel finishing. TUMBLEX "A", most popular for general needs, removes flash, scale, burrs and tool marks, while forming radii and finishes to required microinches. TUMBLEX "T" is bonded, triangular and fast-cutting for special intricate parts, and won't wedge in work slots or holes. TUMBLEX "S", exceptionally dense and long lasting, is bonded spheres that get into areas where other shapes won't reach. "A", "T" and "S" are all made of famous ALUNDUM* (aluminum oxide) abrasive. TUMBLEX "N" is natural stones, exclusively Norton, of rounded shapes that bring up high lustre, especially on die castings and soft metals.



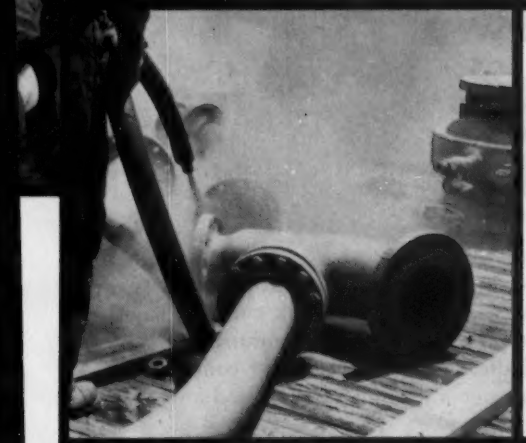
HERE'S HOW TO

Choose the best abrasive for any metal finishing job

Norton tumbling, polishing and blasting materials add "Touch of Gold" advantages to countless applications

Your metal parts can range from tiny needles to hefty forgings. They may be simple or complicated, hard or soft. Whatever they require in polishing or finishing, you can get plenty of "Touch of Gold" benefits from the wide range of Norton abrasives. Find out how. Ask your Norton Distributor for the illustrative, instructive booklets on barrel-finishing, metal polishing, or both. Or write to NORTON COMPANY, General Offices, Worcester 6, Mass. Plants and distributors around the world.

Better Polishing With Every Set-Up — wheels or belts — is easy when you standardize on Norton ALUNDUM abrasive grain. All types are extremely hard and tough, uniform in size, structure and chemical composition and have high capillarity for easy wetting. Type "S", sizes 14 to 90 grit and Type "R", sizes 100 to 240 grit, are noted for fast cutting and the satin finish which they produce. Type "B", sizes 20 to 600 grit, is an all-purpose, blocky, durable grain capable of producing fine finishes.



Fast Cut. Norton ARROW-BLAST* aluminum oxide grain cuts faster than natural abrasives and reduces dust on pressure blasting jobs to minimum. And remember, the less dust in any environment, the longer your operators can work, and the more they'll finish — at lower cost.

G337

*Trade-Marks Reg. U. S. Pat. Off. and Foreign Countries

NORTON

ABRASIVES

Making better products... to make your products better

NORTON PRODUCTS

Abrasives • Grinding Wheels
Grinding Machines • Refractories

BEHR-MANNING DIVISION

Coated Abrasives • Sharpening Stones
Pressure-Sensitive Tapes

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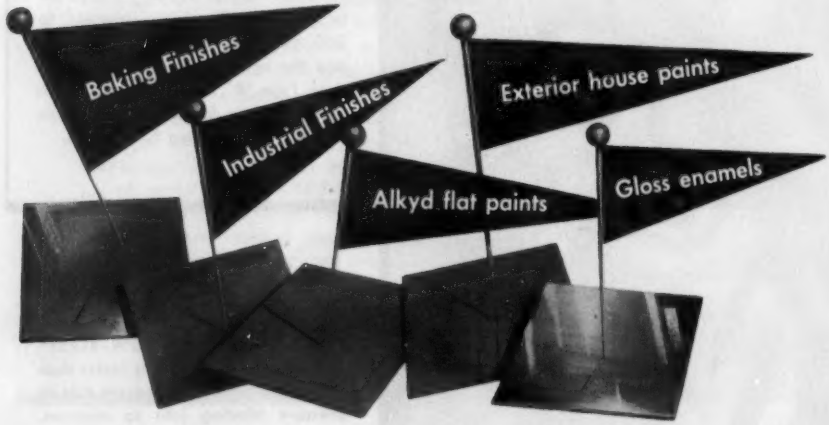
see the proof!

Oronite* ISOPHTHALIC improves coatings—at lower resin costs!



Oronite Isophthalic resins prove to be a lower-cost approach for producing superior surface coatings. Whether you are a coatings consumer, supplier or resin producer—ask us to demonstrate the many new qualities of Isophthalic based products. Just contact the Oronite office nearest you to arrange a demonstration based on your particular coating application.

In addition, Isophthalic resin samples are available for all alkyd applications. These samples together with complete data on their formulations and instruction for their preparation may be secured for your own laboratory evaluation.

Ask us for a demonstration of Isophthalic!

ORONITE CHEMICAL COMPANY

EXECUTIVE OFFICES
200 Bush Street, San Francisco 20, California
SALES OFFICES
New York, Wilmington, Chicago, Cincinnati, Houston, Los Angeles, San Francisco
EUROPEAN OFFICE
36, Avenue William-Favre, Geneva, Switzerland

*T.M. 4352

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a toast...

... to our friends and customers
on our 75th anniversary... and
thanks for making it possible

FREDERIC B. STEVENS, INC.

1882 1957

"Bill, why are you so sure Dow perchloroethylene will do a better job in my degreaser?"

"One big reason, Jess. Dow Perchloroethylene Industrial is tops in *stability*. Its resistance to breakdown and deterioration is as good as you can get."

"So what does it do for me?"

"Plenty. Cleans parts thoroughly the first time through. Eliminates rejects and reruns. Prevents damage to your degreaser and the parts—especially white metal parts."

"Think it'll remove that wax?"

"Sure will. Its higher boiling point gives parts a longer, more thorough cleaning before reaching the vapor temperature. It's real tough on those higher melting waxes."

"O.K., Bill, so it'll really clean. But is it safe?"

"You bet! No flash point and no fire point."

"All right. I'm convinced it's the best solvent for the job. Say, you sure know a lot about it."

"Not really. Dow people know more."

"Who?"

"Dow. The Dow Chemical Company, Midland, Michigan. The company that also makes Dow Trichloroethylene for vapor degreasing, Chlorothene® for cold cleaning, and Dow Methylene Chloride for stripping. Why don't you drop them a line?"

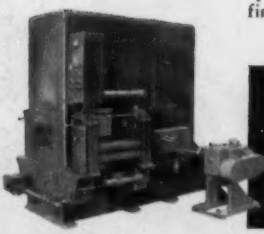
YOU CAN DEPEND ON DOW

For more data circle 320 on Postpaid Card

HILL GRINDING AND POLISHING MACHINES
For FINISHING
Any and All
FERROUS and NON-FERROUS MATERIALS . . .

HILL Polishing Machine
(Hydraulic Table Type)
For polishing individual sheets and plates. Hydraulic reciprocating table with centralized controls.

The basic HILL two-roll vertical head with upper steel idler roll and lower rubber covered contact or work roll (both dynamically balanced) over which the endless abrasive belt travels.



HILL Grinding and Polishing Machine
(Pinch-roll Type)
For pre-finishing, conditioning and polishing. Used as single units or in multiple units for progressive line polishing in wet or dry operations.

FLAT surfaces of ferrous or non-ferrous material can be brought quickly to the high finish so necessary for today's industrial and consumer products. The dairy, automotive, home appliance and engraving industries are typical of the wide range of application for these precise, labor saving machines.

HILL abrasive belt grinding and polishing machines are built in two general types. The hydraulic reciprocating table type polished individual sheets and plates. Table widths vary from 36" to 60". Table lengths range from 60" to 240". The Pinch-Roll type is for progressive line polishing. The HILL two-roll vertical head with endless abrasive belt is the basic principle common to both types.

When writing for information please indicate size and specifications of stock to be finished.

HILL ACME TOOLS FOR INDUSTRY

THE HILL ACME COMPANY

HILL DIVISION
ESTABLISHED 1882
1201 West 65th Street • Cleveland 2, Ohio

"HILL" GRINDING & POLISHING MACHINES • HYDRAULIC SURFACE GRINDERS • ALSO MANUFACTURERS OF "ACME" FORGING • THREADING • TAPPING MACHINES • "CANTON" ALLIGATOR SHEARS • BILLET SHEARS • "CLEVELAND" KNIVES • SHEAR BLADES

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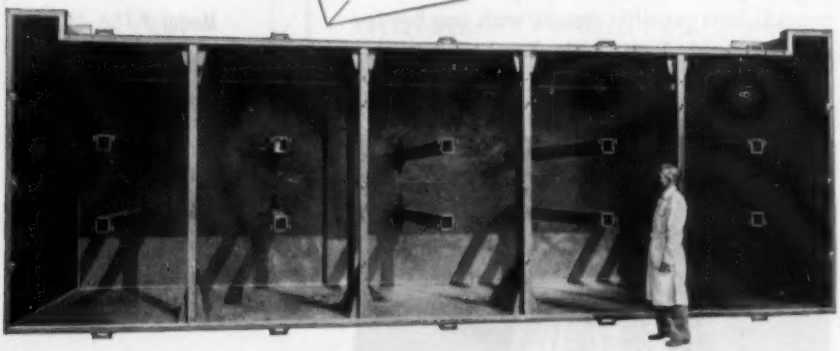
MICCROSOL

SPRAY S-2003

helps *Udylite* break another size barrier!



30' x 9'6" x 9'4" plating tank lined by Udylite with Miccrosol Spray S-2003.

Another size barrier in the coating industry was broken when this 11½-ton plating tank was lined with a 3/16"-3/8" coat of Miccrosol Spray S-2003. The combination of Udylite's efficient 31-foot oven and Miccrosol Spray S-2003 made it possible.

The tank was placed in the oven, coated by spraying, and then cured. When removed, the job was complete.

Miccrosol Spray S-2003 was selected by Udylite for this job both because it could be applied under these unusual conditions and for its outstanding performance as a lining for plating tanks. This material, combined with their facilities, enabled them to turn out a top quality coating job which heretofore would have been impossible.

Write for complete information on your company letterhead.

Developed and manufactured by experienced platers and coaters.

MICHIGAN CHROME *and Chemical Company*

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DeVilbiss

All-around heavy duty – DeVilbiss' famed, precision-built full-production spray gun. Highly perfected cap and tip combinations provide best possible results with any sprayable material. Removable head permits instant material changeover without cleaning.

Fast application – For high-speed, continuous spraying and volume output. Light weight and compactness of P-JGA gun lower operator fatigue. Sprays all materials with top-quality results. Ideal for low-pressure ceramic spraying. Full range of spray patterns.

Model P-TGA

Light production – For precision spraying of small areas, and general touchup, stenciling, blending or special effects. Weighs only 13¾ ounces. Comfortably balanced; smooth trigger action. Suction or pressure feed.

DeVilbiss helps you get the most from the spray method

THE DEVILBISS

Santa Clara, Calif. •

BRANCH OFFICES AND DISTRIBUTORS IN PRINCIPAL CITIES THROUGHOUT

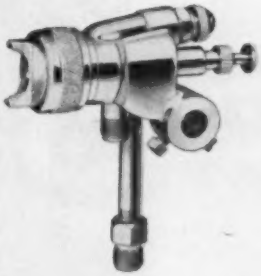
Spray Guns... for every need!

Model P-EGA

Fine detail – Small, easy-to-handle, precision spray gun for fine detail work. Lever-type trigger action enables operator to control fluid flow and spray pattern with the extreme accuracy of an air brush.

Model P-AGA

Automatic spraying – DeVilbiss P-AGA gun for automatic or semi-automatic mass-production spraying. Large capacity, dependability assure high-quality finishes. Rugged, easy to adjust.



Model P-AGA Sprayhead

Gang spraying – The P-AGA sprayhead produces finely atomized pattern with every sprayable material. Adapts to all automatic and gang-spray applications. Simplified design; trouble-free.

These and many more DeVilbiss standard and specialized guns are available through your local DeVilbiss supplier. He also can supply your needs for spray booths, air compressors, air transformers, hose and connections. Call him today!

COMPANY, Toledo, Ohio

Barrie, Ontario • London, England

FOR BETTER SERVICE, BUY

DEVILBISS

THE UNITED STATES, CANADA AND THE WORLD

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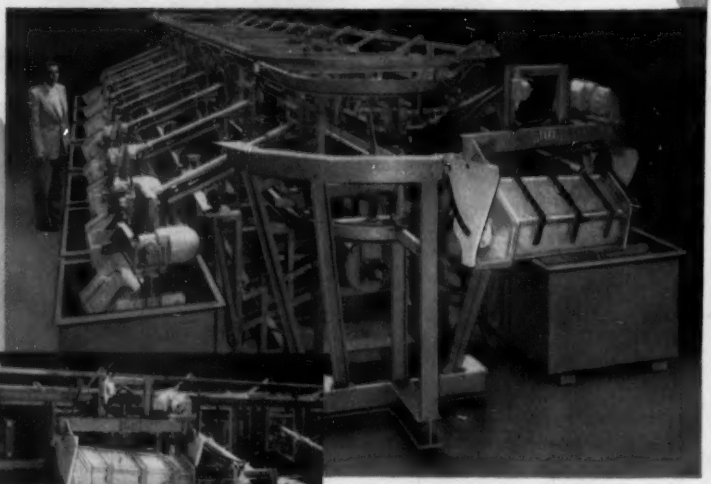
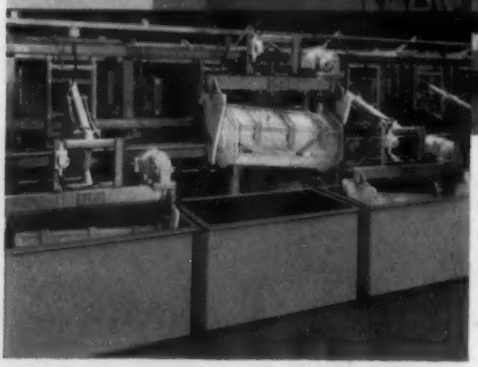
New Automatic Barrel Plater

Loaded with money-making FIRSTS

9 feet minimum ceiling

14½ feet minimum width





Partial view of rinse tanks. The elevated cylinder in the center is at a delayed set down station used for bright dip, chromate coatings and other processes that require short submersion periods. Delayed set down timing is adjustable to give the required submersion time or to skip the tank. Any number of delayed set down stations can be furnished at desired locations.

SIMPLE CYLINDER MOUNTING. The hanger bridge of the cylinder is bolted to the hanger arm of the machine. Cylinders are easily and quickly changed when larger or smaller perforations are required or for any reason. Cylinders of different sizes and types may be used. Present cylinders, when made of materials suitable for full cycle operation, can be converted for use with the BELKE Automatic.

Uniformity of cleaning and electroplating deposit never before approached and new low plating costs.

Continuous automatic operation. Solves skilled help problems, eliminates trouble and waste caused by human error, and puts out a big volume flow of first quality work.

Lowest Maintenance. Simple electro-mechanical operation that keeps working under plating room conditions. Easily adjusted and maintained by plant personnel.

Lowest upkeep. Made of **STANDARD** parts that have been selected for long service, yet are readily obtained and easily replaced by any mechanic.

Small floor space – minimum width, 14½ feet. Length varies with number of barrel stations.

Low head room – minimum ceiling, 9 feet.

A few of many other special advantages:

BELKE Double Oscillating Cylinders at no extra charge.

Hanger arms permit mounting present cylinders or other cylinders of different sizes.

Separately timed delayed set down and skip stations as required.

Low initial cost. Ask your BELKE Service Engineer or write for particulars.

Belke Manufacturing Company
947 N. Cicero Ave., Chicago 51
EVERYTHING FOR PLATING PLANTS

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Enlarged photo-insert shows spray as droplets, no webbing.

the strippable booth-coating that sprays fast . . . ends cobwebbing

LIQUID ENVELOPE #49-36 LO-VIS

LO-VIS gives you all the low-cost clean-up benefits of strippable booth coatings *but completely eliminates cobwebbing!*

It's a low-viscosity formulation, fast spraying, fast drying, and recommended especially for low-pressure equipment.

When clean-up time comes, LO-VIS peels off in big pieces and your booth is cleaned in minutes!

Try LO-VIS and start saving on booth maintenance. Send the coupon now for a 5-gallon sample at the drum-lot price.

#49-36 LO-VIS is one of three formulations for use under other-than-ordinary operating conditions. When special properties are *not* required, we recommend . . .

LIQUID ENVELOPE #49-5396-2
H. D. ECONOMY
. . . used world-wide for over 10 years.

BETTER FINISHES & COATINGS, INC.

268 Doremus Ave., Newark 5, N. J.

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Gentlemen:

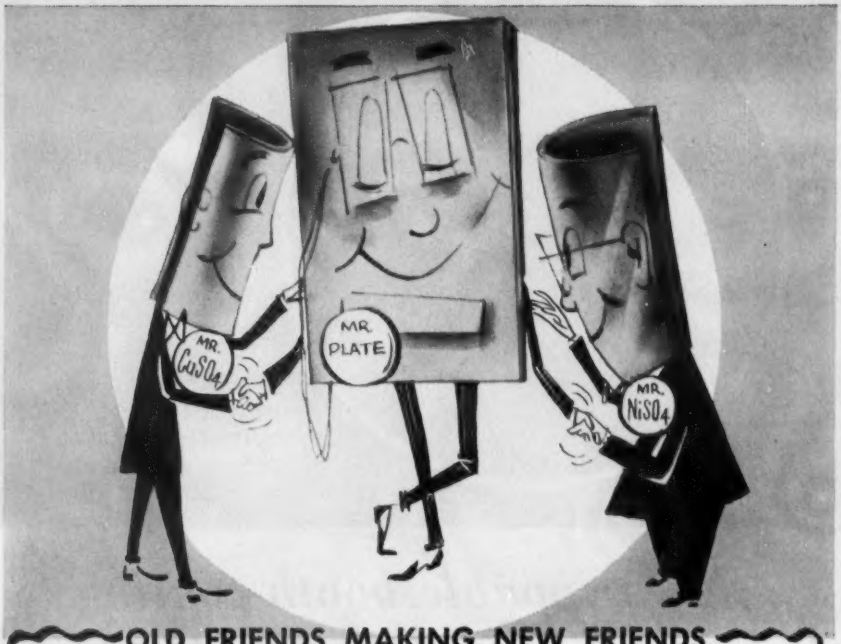
Please send me a 5-gallon test-sample of Liquid Envelope #49-36 LO-VIS and bill me at the drum-lot price.

NAME: _____

COMPANY: _____

ADDRESS: _____

_____



OLD FRIENDS MAKING NEW FRIENDS.

Copper and Nickel have been brought up together in the plating field. They plate, deposit, and alloy together—they are OLD FRIENDS.

TRIANGLE BRAND COPPER SULFATE and TRIANGLE BRAND NICKEL SULFATE as principal sources of copper and nickel in the plating field, are making NEW FRIENDS every day.

The reasons are obvious — purity, solubility, uniformity and high conductivity of their solutions result in QUALITY PLATING.

All-important "extras" found in the use of Triangle Brand Copper and Nickel Sulfates yield long-life plating performance that MAKES THE DIFFERENCE.

Specify: **Triangle Brand Copper Sulfate and Triangle Brand Nickel Sulfate for dependable plating baths.**

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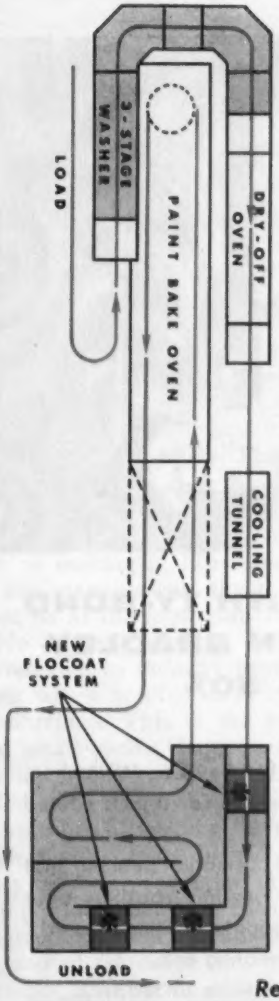

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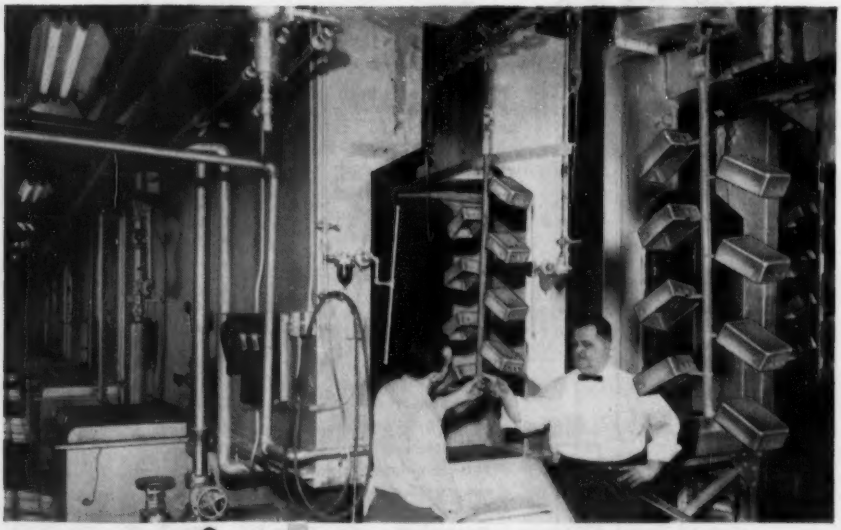

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editorial

Where Do The Answers Come From?

Executives and engineers in the finishing industry are continually seeking answers to production or processing problems. With equal vigor they are searching for new and improved finishes to solve production or service problems, or to stimulate product sales.

We are accustomed to look to research laboratories for answers to these problems—especially so when we want answers in the form of new developments. Supporting this idea, J. Irwin Miller, chairman of the board of directors, Cummins Engine Company, in discussing "Executive Planning for 1970," states in part: "The inventive capacity and mechanical inspiration of man has never been higher than it is today. Therefore the businessman should anticipate and assume the rapid obsolescence of all his products and should endeavor through research to be, himself, the one who obsoletes them. He should realize that, whatever he is doing, whatever he is making, there is a better way of doing it and a better way of making it. If research is to be really helpful, it must be a daily concern of top management; the top management of a company and its research staff must be in the most constant and intimate kind of communication."

No one will disagree with Mr. Miller's strong statements on the importance of research to industry growth and progress. There is, however, another source from which helpful ideas may be gained and answers to current problems may be obtained. This is the employee suggestion program, which, in both large and small plants, has proved most rewarding to the company (and profitable for the individual who is thoughtful enough to suggest improvements).

Finishing engineers and supervisors also have problems. They have the responsibility of keeping their plants running at top efficiency so that products of high quality can be turned out at competitive costs. For answers to the immediately pressing production or process problems, management turns to its engineers and not infrequently to the technical service representatives of supplier companies. Engineers and supervisors are aided in performing their function by their background of education and professional experience, by their activities in technical societies, and by the information they find in technical and trade magazines.

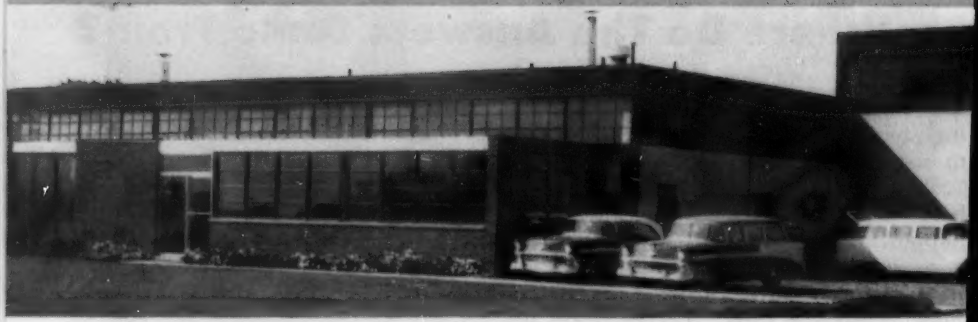
We who publish magazines for the finishing industry seek to collect and print information which is of immediate and direct value to the people in the industry. Also, such information may stimulate the thinking of the reader and lead him to solutions for problems and improvements in processes.

Without detracting from the importance of research, it is well to point out that no individual or group has a monoply on ideas. Therefore, finishing plant management will do well to use the other sources of ideas mentioned above. Many of the "answers" may be found there.

Ezra A. Blount

—EDITOR

Plastisol Coating of Plating



New plant of Kaybar, Incorporated. Office and engineering area feature modernistic interior.

By EZRA A. BLOUNT
Editor

products feature finishing

AS PLATING OPERATIONS HAVE GROWN IN SIZE, many jobs and functions associated with plating have expanded into full-sized industries. The old-time plater formulated his own solutions, guessed at the chemical content, and devised his own cleaning and plating cycle. He designed and built his own plating racks, and (sometimes) used such materials as were available to insulate them.

Specialization in the plating industry brought about the need for a group of specialists to design racks of all kinds, and apply the correct, modern rack insulating material in the proper fashion. Since coating plating racks is similar to lining plating and processing tanks, custom rack coaters normally perform tank lining services also.

Such an organization is Kaybar, Inc., Birmingham, Michigan. Founded in 1953 by Bill Cryderman and Art Marshall, the company has made three successive moves into larger plants in three years. The present plant contains 10,000 square feet of floor space for office, engineering, and production activities. The plant has a two-level loading dock and a three-station truck loading well. A railway siding runs alongside the plant, so that products can be shipped by rail.

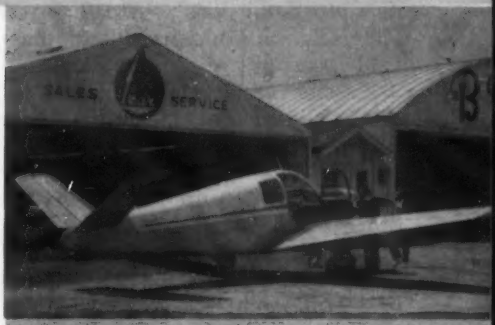
Racks and Tanks ---A Job for Specialists

Kaybar designs, manufactures and coats products not only for the plater but also for the equipment manufacturer.

Types of products coated at Kaybar include plating and chemical processing tanks, exhaust ducts, fans, air-washing systems, plating racks, diaphragm tank frames, materials handling, cleaning and degreasing baskets, conveyor carriers and hangers, conveyor carrier baskets, tumbling barrels, fans and fan blades, anode baskets, marine hardware, aluminum steering wheels, washing machine agitators, battery cables and hold-downs (retainers) and electric switch handles. The application varies with the type and degree of protection desired. The coatings protect against corrosion and mechanical abrasion, and provide insulation from electric currents and metal deposits.

Coatings are applied by spray and dip methods and combinations of the two. Plastisol coatings and phenolic coatings are applied and combinations of the two are used for applications where high acid resistance is desired.

The coating combination for use on items that must withstand severe acid corrosives consists of a phenolic coating, plastisol primer, and final plastisol finish coating. Unichrome B-124 phenolic coating is used, as well as Unichrome 218X plastisol, Unichrome 5300 spray plastisol, and modified Super 5300.



(Above) Kaybar's customers get prompt service. Kaybar President Cryderman (left) checks the company plane as Vice President Marshall observes. Both of them are licensed pilots.

★ ★ ★

Fig. 1 (Below)—A pre-heated frame for a diaphragm plating tank is dipped in Unichrome 218X plastisol. (Photograph courtesy Metal & Thermit Corporation, Rahway, N. J.)

"Insulation and proper rack design aid in producing a uniform deposit . . ."

Kaybar 553 orange plastisol, Dennis black plastisol, Arcadia red plastisol, and Unichrome aqua plastisol coatings are also applied.

Kaybar has complete facilities for rack building and insulation, tank lining, and coating metal parts with plastisol.

Production equipment needed to process tanks, air washers, and plating racks includes complete fabrication facilities, sand blast and pickling equipment, several large dip tanks for plastisol, and two gas-fired convection ovens. The large oven is 28 feet deep with a 14 by 14-foot door opening. This oven requires 5,000,000 B.t.u. to maintain temperature in the 7,000-cubic-foot interior. Between 6,000 and 8,000 c.f.m of the oven atmosphere are exhausted and the hot air in the oven is recirculated at the rate of 60,000 c.f.m. A smaller, gas-fired, recirculating-type oven is 10 feet deep with a door opening 8 by 12 feet. The sum total of exhausts for the entire plant is 32,000 c.f.m., and an air-makeup system to replace that amount of air with "conditioned" air has been installed.

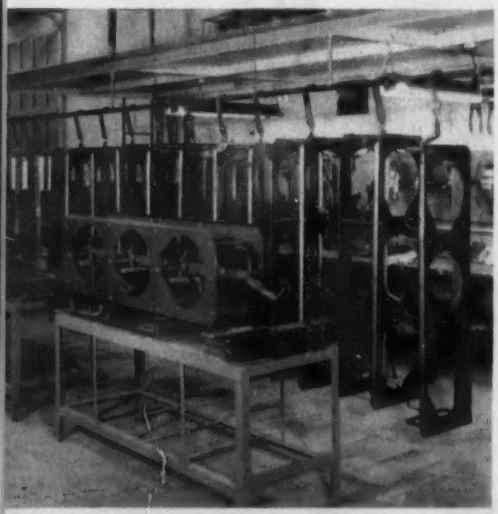


Fig. 2—View of rack building and assembly area. Completed racks for plating hub caps on a production basis are shown. Center splines of racks are coated with plastisol.

Rack Manufacture

To secure optimum results from today's high-speed bright plating solutions, plating racks designed for the job are essential. To obtain a uniform thickness of deposit on the complicated metal shapes now being manufactured, the plating racks must be skillfully designed and properly insulated.

Insulation saves valuable metal which would otherwise plate out on the rack. It also ensures maximum use of plating current for depositing useful metal. Insulation and proper rack design aid in producing a uniform deposit over the irregular surface being plated.

The engineering and design skill and experience necessary for successful results make rack coating a job for specialists.

Kaybar has completed facilities for the design and manufacture of racks of all types. Figure 2 shows specially designed plating racks to be used to apply a chromium flash to stainless steel wheel discs. Racks of this type are manufactured in sections, so that one part can be in-

Fig. 3 — Using electric hoist, operator removes a plating rack from dip tank containing Kaybar 553 orange plastisol. Preheating, curing oven is shown in background.

sulated or coated with plastisol and the other areas left bare. The various sections are finally assembled into the completed rack. Necessary metal forming, soldering, spot welding, and other operations are performed in the course of rack manufacture.

Rack Insulation

Plating racks are cleaned and pickled prior to being insulated with plastisol. The cleaned racks are dipped in plastisol primer and baked at 375 deg. F. for 20 minutes or less. Racks to be dipped in the final plastisol coating are preheated at 250 to 600 deg. F. depending upon the thickness of the metal part and the amount of pickup of plastisol desired. The dipping rate and the angle of dip must be controlled carefully to secure desired results. The rate of withdrawal of the rack from the plastisol controls the amount of drip and the distribution of the coating. A slower rate of removal will aid uniformity of coating thickness.

Figures 2 and 3 are views of the rack-dipping area, showing the two tanks of plastisol sunk in the floor. As can be noted, the racks are handled by an overhead hoist, which is used to lower the racks in the plastisol and remove them. The hoist can be used to transfer the rack carriers to overhead monorails which lead into the pre-heating and baking ovens. The tanks of plastisol are 10 ft. deep with openings 3 by 6 ft.

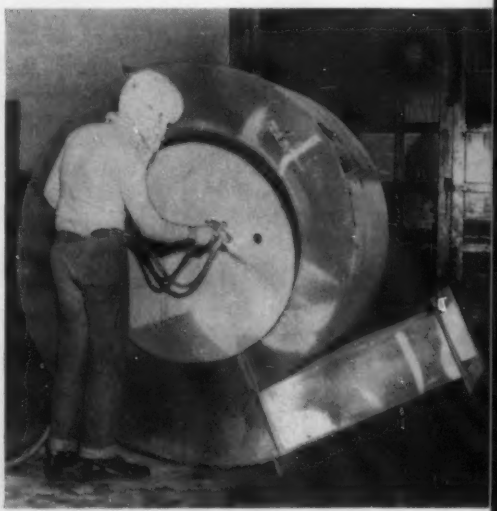


Fig. 4—Plastisol primer coat is sprayed on sandblasted interior of fume washer section. Conventional spray equipment is used. Sprayed coating is baked at 360 deg. F.

The material must be circulated continuously and filtered to remove foreign matter and air bubbles. The large tanks have a dam-type overflow. The plastisol flows into a sump where it is processed through a vacuum de-airing chamber and returned to the bottom of the dip tank by a diaphragm pump. Small tanks employ a sharp notch in the overflow weir to remove air bubbles.

As much as 1/8 to 3/16-inch thickness of plastisol coating can be applied in one dip. After dipping, the coating is baked in convection ovens at 375 to 380 deg. F. for 1¼ to 2 hours. Although 1 or 2 dip coats are normally satisfactory, some special parts are dipped 2 to 4 times in the plastisol.

After parts receive the final baking, they are allowed to cool, contact points are trimmed and any necessary assembly is performed.

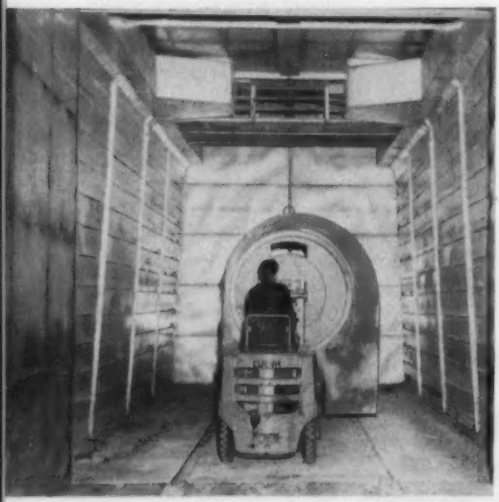


Fig. 5—Large equipment sections which have been sprayed with plastisol primer are transported into a large convection oven for baking by means of a fork lift truck.

Fig. 6—Interchemical wet film thickness gage measures the thickness of sprayed plastisol.

Spraying Plastisol Coatings on Tanks

Large tanks for plating, pickling and dipping, exhaust ducts, air washers, fan housings, and other large objects are coated with plastisol by spraying. These objects are too large and complicated or irregular in shape to be dipped easily. Products of this type are prepared for plastisol coating by sand blasting or pickling in 20 per cent hydrochloric acid. Oiled parts are cleaned in a small degreaser.

Primer (or phenolic) coatings are sprayed in a thin coat on the surface of the product (Fig. 4). A conventional spray gun and standard spray pressure tank are used. Primed parts are then placed in a large convection oven (Fig. 5) for baking at 360 to 370 deg. F. for 30 to 45 minutes.

Spraying the plastisol top coats is done with a specially designed spray gun. The plastisol is pumped to the

gun with an Alemite pump. Plastisol travels through a ¾-inch fluid line under 250 to 350 p.s.i. fluid pressure. Atomizing air is delivered to the gun at 100 to 120 p.s.i. A coating with a wet thickness of 20 to 60 mils is applied by spraying. Periodic tests of wet thickness are made with an Interchemical Thickness Gage (Fig. 6).

Sprayed plastisol coatings are baked in the convection oven from 45 to 60 minutes at 370 to 380 deg. F. (Figs. 7, 8). Two or three plastisol coats are applied and each coat is baked. A spark test to check for continuity of coating and freedom from pinholes is performed after each spraying, baking cycle (Fig. 9).

For the final finish baking, a time of 2 to 3 hours at 385 to 390 deg. F. is required to cure the coat thoroughly.

Final dry or baked coating thickness is 60 to 80 mils and a heavy-duty top coat may be as much as 3/16 inch thick. Coating thickness is measured with a General Electric thickness gage. Test panels are processed periodically and inspected carefully as an additional quality control procedure.

Plastisols require solvent-free atmosphere in which to cure. Therefore, the air in the oven must be circulated 10 times per minute, and it is changed once every minute by means of an air-makeup system

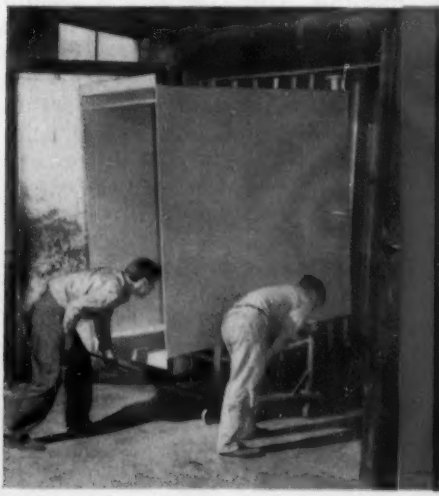


Fig. 7—Tank sprayed with plastisol is placed in oven to cure. Tank is positioned so that solvent vapor will "flow" out of the tank and be removed in the oven exhaust.

Fig. 8—Fume washer section is placed in baking oven. When this oven is fully loaded with sprayed parts, there can be as much as 150 gallons of plastisol in the oven.

with a capacity of 16,000 c.f.m.

Spraying the plastisol requires special techniques and conditions of application. Temperature and humidity of the air in the spray room are considerations. The viscosity of the material must be controlled. The method of feeding the material to the gun is important. There is some advantage in preheating the atomizing air used for spraying, and in preheating the plastisol itself. The air requirement for spraying this material is 45 to 50 c.f.m. of air per spray gun. At Kaybar, DeVilbiss special, heavy-duty tips with 3/8-inch opening are used for spraying the plastisol.

Production Plastisol Coating

A completely conveyorized setup has been installed to coat automobile storage battery retainers with plastisol. This two-oven, single-dip tank setup is shown in Figs. 10 and 11. The overhead conveyor that transports the battery retainers through the system can be set to travel from 6 in./min. to 4 ft./min. Usually it runs at 3 ft./min.

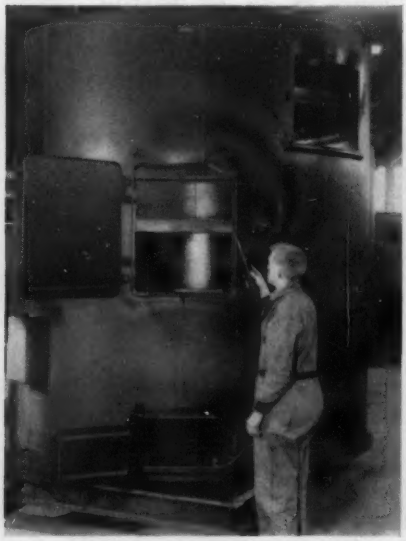


Fig. 9—Inspector makes spark test of sprayed and cured fume handling unit. High-voltage spark shows up any pinholes or other breaks in the tough plastisol coating.

"Well, let's see now . . . ten cents more makes a buck sixty you owe me for coffee."

The degreased or cleaned battery retainers are dipped in plastisol primer in bulk and then racked. The racks are hung on the transport conveyor, which takes them through a 5-minute preheat cycle in a 14-foot, 100-k. w. Jensen radiant oven.

Each rack of battery retainers is then dipped hot in Dennis black plastisol (or other specified color) and hung back on the conveyor (Fig. 10). A free-air travel of 12 minutes follows, during which time the plastisol "sets up" (in 1 or 2 minutes).

Drippings are caught in a drip

trough which returns the plastisol to a filter for filtration and reuse. The coated retainers are baked in a combined convection and radiant oven (Fig. 11) with a section of infrared panels at the end of the oven to give the finished plastisol coating a high gloss.

Coating Aluminum Steering Wheels

Among the products which are coated with plastisol on a production basis are aluminum steering wheels. The processing cycle for these wheels is:

1. Degrease.
2. Dip in phenolic coating material.
3. Bake at 375 deg. F.
4. Dip in plastisol primer.
5. Bake and preheat.
6. Dip in plastisol finish coat. Withdrawal is carefully controlled mechanically.
7. Final cure-bake.

Stripping and Reworking

Many persons who have tried to do plastisol coating have had difficulty with the stripping of worn parts so that they could be re-coated with plastisol. This problem is usually encountered on baskets, conveyor hooks, and plating racks. A well-cured plastisol coating exhibits a tensile strength of 2,000 to 2,200 p.s.i. and a bond strength of 200 to 250 p.s.i. when properly formulated and correctly applied. These properties plus its chemical inertness make the stripping of a plastisol coating most difficult.

Kaybar has developed a chlorinated-base solvent, designated as

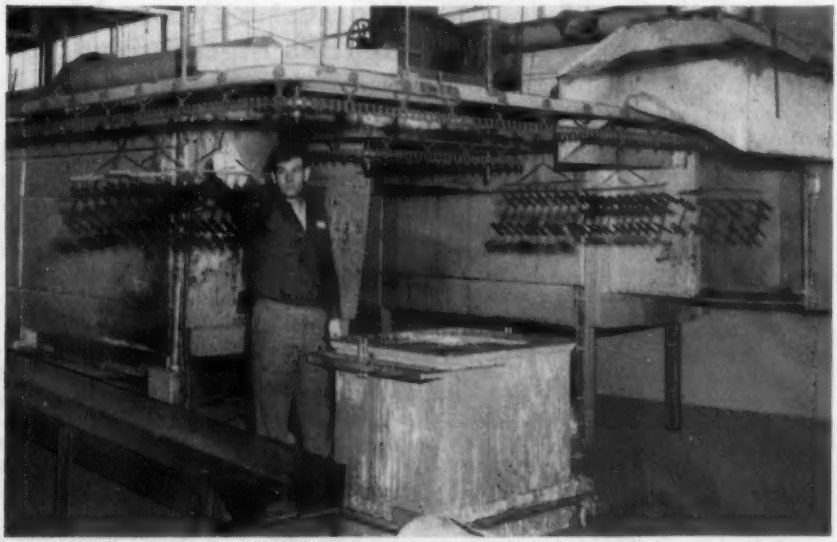


Fig. 10—Operator hangs battery retainers on transport conveyor to "set up" and cure. Preheated retainers, ready for dipping, can be seen at right of photo, as they leave the preheating oven. Plastisol coated retainers "set up" during free air travel. A final baking cycle in a combined convection and radiant oven completes the finishing process.

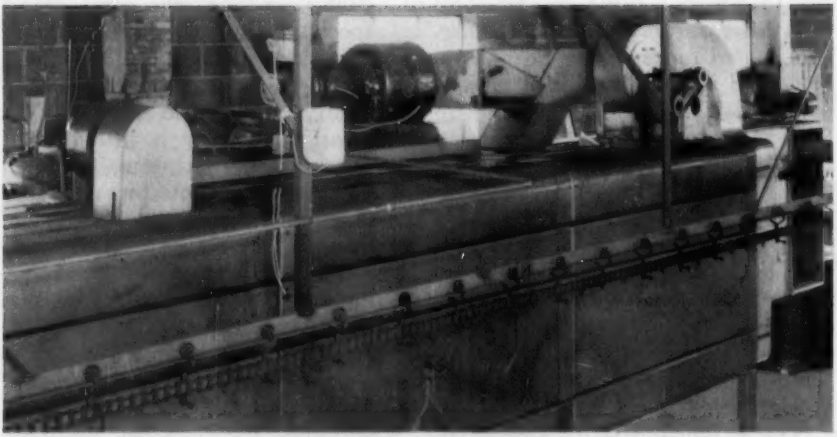


Fig. 11—Top view of Jensen oven used for curing plastisol on battery retainers. This conveyorized setup can be used for production plastisol coating of many types of small parts.

(Figs. 3, 4, 5, 10 by PRODUCTS FINISHING. Fig. 2 courtesy Metal & Thermit Corporation, Rahway, N. J. Other photos courtesy Kaybar, Incorporated, Birmingham, Michigan)

Stripper K-122 to solve this problem. Parts to be stripped are immersed for 2 to 24 hours in this solvent to loosen the primer coating. The entire coating can then be stripped off easily.

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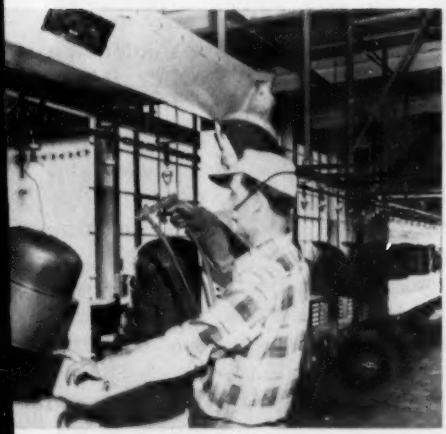
"Paint spatters on your new overalls awreddy, and you only had 'em a week"

Worcester Pressed Steel Installs Mechanized Paint Line

A new mechanized paint line, capable of applying almost every kind of paint to stamped components, has been installed at the Worcester Pressed Steel Company, Worcester, Massachusetts. The company manufactures stampings and Hi-Pac pressure cylinders and valves.

Company President Carter C. Higgins reports that the new line is "fully equipped to spray with all types of paints including enamels, lacquers, Japans, bituminous enamel and primers." This makes it possible for the company to supply painted stampings rapidly and efficiently.

The mechanized line provides a continuous flow of stamped components through an eight-foot, Paasche spray booth. From the spray booth, a conveyor system carries the freshly painted components to an oven, where four



Workman spraying stamped component on new conveyorized paint spray line installed at Worcester Pressed Steel. (Photo courtesy Worcester Pressed Steel Co., Worcester, Mass.)

banks of infra-red bulbs dry the paints.

If oven drying is not wanted, another conveyor bypasses the oven and carries the stampings to an area where they can dry by air.

The stamped parts are painted either individually or in groups. This is accomplished by controlling the speed of the conveyor system and the spacing of the components as they are placed on the conveyor belt.

★ ★ ★

Man-made Moon Encased in Gold

To facilitate optical tracking and to provide protection from the elements in outer space, the soon-to-be-launched Earth Satellite has been plated with bright gold, it was revealed by Sel-Rex Corporation, Nutley, N. J., supplier of the plating solution. This company's patented gold plating formulation was also used to plate most internal parts and housings for instruments, as a shield against corrosion and friction heat.

The "man-made moon" will be launched sometime during the International Geophysical Year (July 1, 1957 through December 1958) to probe, and allow man to observe, the mysteries of outer space.

Designated *Project Vanguard,* a joint Army, Navy and Air Force undertaking managed by the Chief of Naval Research, the crux of the entire program is the collection of scientific data once the satellite is placed in an orbit around the earth.

In order to properly evaluate and compute data transmitted from the satellite, it must be tracked optically and by radio during the entire journey through space. Considering the tremendous stresses and strains and atmospheric conditions to which the satellite will be subjected, it is apparent that special

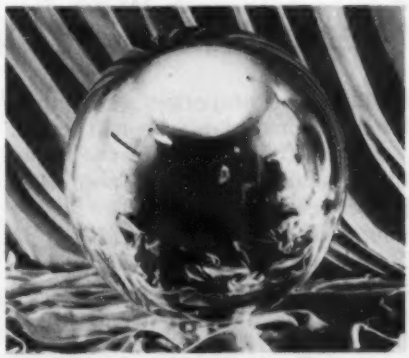


Fig. 1—Highly polished gold plated surface of man-made moon encased in bright gold reflects camera, cameraman, everything in the entire room down to the minutest detail.

Fig. 2—A view of the partially assembled Earth Satellite, showing the highly reflective interior and instrument housings, which were electroplated with bright gold as a shield against corrosion and friction-heat. J. S. Kirkpatrick, Brooks & Perkins vice president of Research and Development, holds one-half of the satellite shield and cap. Final assembly of the "moon" requires hundreds of tiny jewelry-type screws. (Photographs courtesy Brooks & Perkins, Detroit, Michigan)

metallurgical properties were called for in the materials of construction.

Because it is the lightest of structural metals, (a thousand pounds of propellant is required for every pound of satellite) in addition to having other unique physical characteristics, magnesium was selected as the basic material of construction. Brooks & Perkins, the country's leading independent producer and fabricator of magnesium, was awarded the contract to build the satellite's shell.

Researchers had already decided on gold for the satellite's outer skin to provide, among other things, maximum reflectivity which would, figuratively, "leave tracks in space" for the earth data-receiving stations to follow.

Before the gold plating specifications of the satellite were fixed, extensive experimental work was conducted by the Naval Research Laboratory to test adhesion and other characteristics of gold plating on magnesium. Many standard and proprietary gold plating formulations were tested. The bright gold electroplating formulation selected was chosen because its deposits retain desirable metallurgical properties of 24K gold in addition to being hard, dense and reflective.

Fig. 3—Gold plated satellite being sprayed with Coverlac strippable compound. This coating air dries to form a tough plastic film which protects the surface of the product during shipment, and can be peeled from the sphere easily. (Photograph courtesy Spraylat Corporation, New York 16, New York)

"Formulators of metal cleaning compounds prefer Dow Alkali"

Costs in your metal cleaning operation are directly affected by the cleaning agent used. Take into account how fast and thoroughly it cleans, as well as the purchase cost. If it doesn't clean with top efficiency, chances are your over-all cleaning costs are not as low as they could be.

Many plants have cut costs substantially by switching to products made by formulators who use Dow Alkali. The reason is simple: Dow Sodium Orthosilicate and Dow Caustic Soda deliver the highest alkaline cleaning power you can buy for any price.

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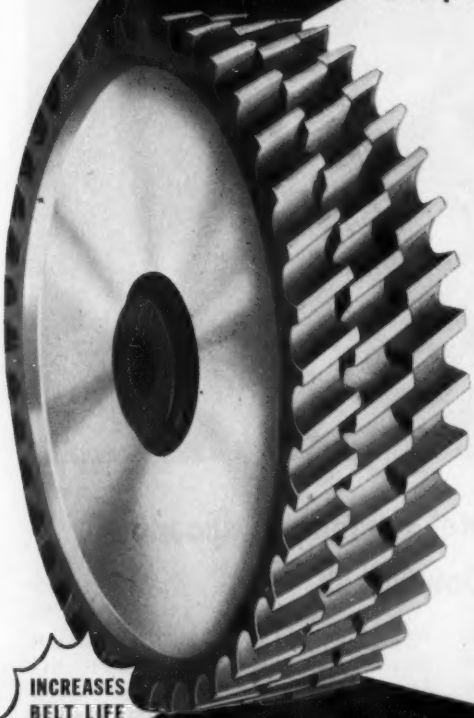

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- CONFORMS BETTER — Most versatile of all. Grin even odd shapes because deep serrations allow it conform like no other rubber wheel.
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- INCREASES BELT LIFE up to 200% and better — P duction tests prove it. With deep grooved R-58, belt becomes self-cleaning. It "shells out" and p vents glazing.
- ALLOWS GREATER FLEXIBILITY — Just add wheels any width, any combination of durometers you ne for the job.
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- LASTS LONGER — Made of new, specially c pounded, High tensile long wearing rubber. If edge wears, just reverse the wheel and it operates effectively as ever.

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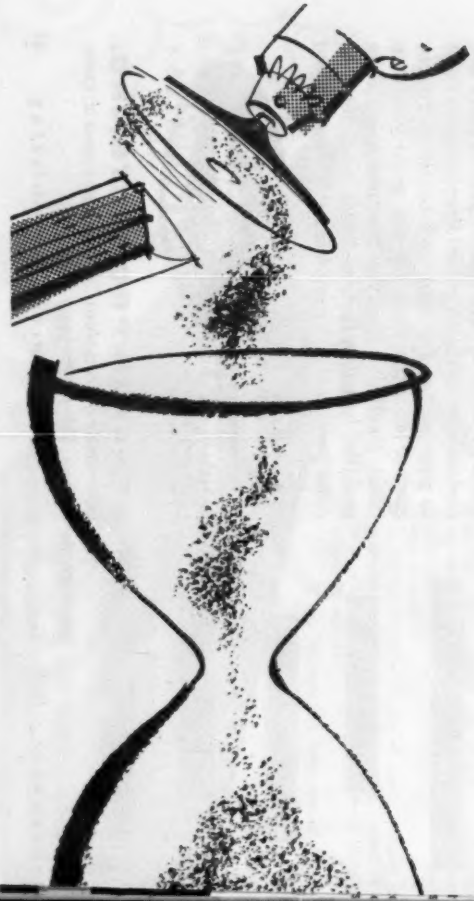

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Let a Lowe Brothers finishing engineer help *you* find ways to reduce costs. He knows finishes *and* methods — and he'll gladly make a "flow-chart" analysis of your finishing system if you'll send the coupon. No obligation, of course.

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A
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65% savings in paint!
A To clean out a conventional spray gun after transferring to another paint line, 7 to 10 ounces of paint must be "bled" to prevent a color inter-mix.
B Only 2 to 4 ounces of "bleed-out" paint are required to clean out the new Binks Model 19J spray gun —a 65% material savings.
A
Fluid passage
ordinary spray gun
B
Fluid passage—Binks Model 19J

New Binks spray gun for circulating systems

Cuts clean-out costs when changing colors 65%

Plants using multi-color paint circulating systems frequently shift spray guns from one color line to another. To clean the old color out of the spray gun the new color must be run through the gun,(and quick detachable hose connection) until there is no danger of inter-mix. Paint lost through this "bleeding" operation runs between 7 and 10 fluid ounces.

New spray gun cuts "bleed" losses almost 65%. Binks Model 19J spray gun, when used with the same quick detachable hose connection, slashes "bleed-off" losses. Only 2 to 4 fluid ounces must be passed through the passages to make certain there is no inter-mix to cause a finish reject.

Unique design features. Binks Model 19J is an efficient, dependable production spray gun in every respect. Its paint saving characteristics are achieved through two unique internal design features. Design feature number one greatly reduces the amount of paint contained between material inlet and nozzle orifice over that contained in conventional spray guns. Feature number two eliminates all "pockets" in the gun head which can trap paint. This also contributes to faster clean-out with less material waste.

Automatic model available. Binks Model 21J is an automatic spray gun, triggered by air pressure. On automatic painting machines it provides the same paint saving economies as Model 19J.

All the facts in Bulletin RFG. Get the complete story on these two new Binks spray guns. Ask your Binks industrial distributor for a copy or write direct to the address below.

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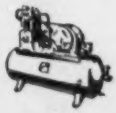
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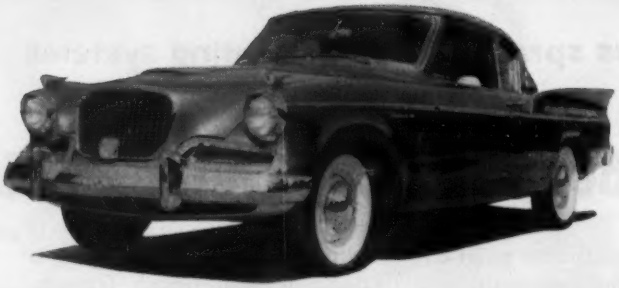

The 1958 Studebaker Silver Hawk.

Paint Finishing at

By GERARD H. POLL, JR.
Associate Editor

The result of many years of experience in producing quality automotive finishes, this system turns out a high-quality finish with equipment that isn't always conventional for the automotive industry . . .

ONE OF THE BEST EXAMPLES OF GOOD PAINT-FINISHING PRACTICE is the careful painting process carried out by the automobile industry. Automobile makers spare no effort in producing durable and attractive finishes. Why is this phase of automobile manufacturing so im-

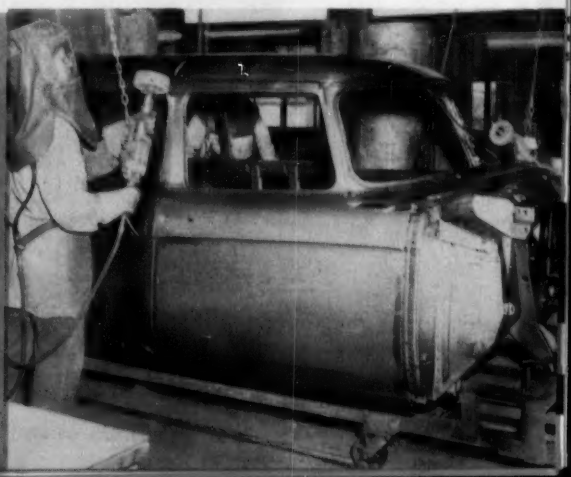

Fig. 1 — Operators use set-up wheels on air-operated sanding tools to polish out scratches in the metal body after it has been welded together.

The 1958 Studebaker Champion two-door sedan.

Studebaker-Packard

portant to the manufacturer? For several reasons: 1) appearance sells automobiles—even the most inspired design would look rather shoddy with an "orange-peel" paint job; 2) the automobile business is so competitive that everyone is always on the lookout for a way to produce a better finish more economically—pennies mean a lot if you can save enough of them; 3) perhaps the most important reason that automobile men spend so much time trying to improve finishes is the primary reason for painting a car in the first place—to protect it. And there are few manufactured articles that give a paint finish a rougher time in service than automobiles.

In summer, the automobile finish gets doused by rain and then steamed dry by the hot sun; dew collects on it at night, and the sun gives it a ten-hour bake during the day; stones fly up and nick it, exposing the base metal; salt on the streets after a snow-fall speeds corrosion wherever it can reach the base metal; and in winter, the whole car may be sheathed in ice for days. All this the finish must resist.

Since the auto maker spends so

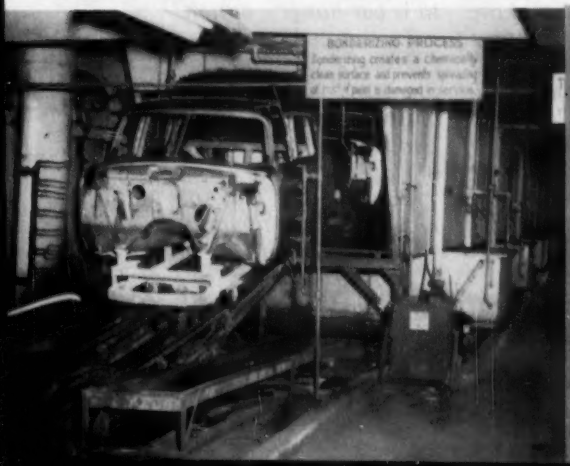

Fig. 2—Bodies coming out of the 5-stage cleaning and phosphatizing tunnel. Small jets all around the body are rinsing it with deionized water spray.

". . . the people in charge of quality control and the finishing engineers ask each manufacturer to supply test samples . . ."

much time and money to get a top-quality finish, it pays us to take a look at how he chooses his finish, what kind of preparatory steps he uses before painting, how he applies the paint.

A fine example of good practice in automotive finishing is the method used by Studebaker-Packard Corporation, South Bend, Indiana. Recent advertisements by this company stress "craftsmanship." At South Bend, this isn't just an idle phrase. It's drummed into the production people. Signs in the plant urge everyone to be careful, and to do each job as it should be done.

A tremendous amount of time and effort goes into testing and evaluation at Studebaker-Packard before a paint is poured into the central supply tanks that serve the production lines.

First, the designers choose the colors. Then the people in charge of quality control and the finishing engineers call in the paint suppliers (there are five primary sources — Cook, Jones-Dabney, Du Pont, O'Brien and Rinshed-Mason) and ask each manufacturer to supply test samples of each color.

As the samples come in, they are sprayed onto carefully prepared test

About Studebaker-Packard . . .

Studebaker is the oldest name *in highway transportation in the world. The company has turned out almost 8 million vehicles during the 105 years since its founding as a tiny blacksmith and wagon-building shop in South Bend, Indiana.*

During the War Between the States, Studebaker turned out wagons, ammunition carts and ambulances for the Union Army.

The South Bend firm got into the automobile business shortly before the turn of the century. In 1902 the company sold its first electric unit. The first gasoline-powered automobile was delivered two years later.

By the end of World War I, Studebaker sales had climbed to $223,000,000 for a two-year period.

During World War II, the company produced military trucks, tracked vehicles and heavy-bomber engines.

After the war, Studebaker captured the public imagination by offering the only totally redesigned automobile on the market to a car-hungry nation.

In succeeding years, company engineers continued to aim for increased economy of operation, and in 1954 and 1955, the company's cars made a clean sweep of the Mobilgas Economy Run.

Packard is also an old-line name in the automobile business. Three "Packard Carriages" were displayed at America's first automobile show in Madison Square

panels (the "Gold Standard" panels are supplied with a specified phosphate coating by Parker Rust Proof Company and then primed with Studebaker-Packard's standard primer before the paint being tested is applied). The paint under test is applied to meet thickness specifications (2½ mils) and then baked to duplicate production conditions.

The finished test panels are then subjected to a series of tests, including humidity, weatherometer (a combination of arc lights and water spray for 500 hours — it simulates the weathering which the finish will receive in service), alkali-spotting resistance and water-soak resistance.

After the results of these tests have been tabulated, the finish that

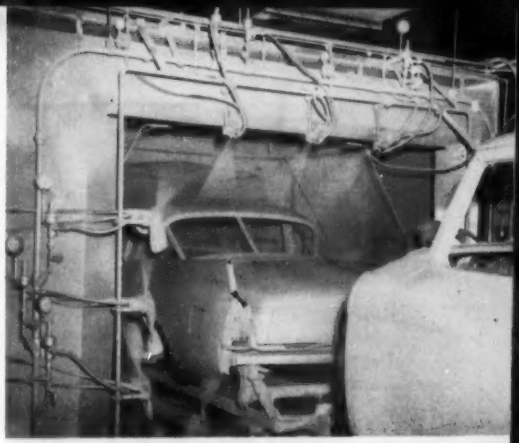

Fig. 3—Bodies enter one of the two electrostatic priming booths. Guns all around the opening are spraying out paint, which is attracted to the grounded body. Four such Ransburg No. 1 installations apply four coats of primer. Fin on the rear fender of the "Hawk" model inside the booth was primed before it was bolted onto the fender.

Garden in 1900. Of the 42 makes of automobiles exhibited, only the name of Packard survives today.

In 1915, the company introduced the Packard Twin-Six, probably the best-known car of the era and of Packard's early history. It had a V-type twelve cylinder engine, the first such engine offered by an American company.

These engines were the forerunners of the Liberty Motor of World War I, the first mass-produced aircraft engine.

For the six years prior to 1930, Packard delivered more cars than any other manufacturer in its price class. During the depression, the company entered the medium-priced field, resigning its position of dominance in the fine car field, where it had once sold 60 per cent of the cars.

During World War II, Packard produced 55,523 Rolls-Royce Aircraft engines and 13,000 marine engines for the Navy's famed P-T boats.

To strengthen the company's position in the automobile industry, Packard combined with the Studebaker Corporation in 1954, to form the Studebaker-Packard Corporation.

As part of a program to reduce costs and increase sales, Packard manufacturing was recently moved to South Bend, Indiana, from Detroit. Here the company has been producing the Packard Clipper Line, emphasizing the medium-priced field.

Fig. 4 — Primed bodies begin their trip through the Mahon convection-type baking oven. Pallets are hooked to floor conveyor.

is to be used is selected by choosing the paint that is the best compromise of all the desired qualities. A larger sample of this paint is then obtained and this is used on a small production run. This is observed carefully to see that the finish is satisfactory from a production-application standpoint; samples are sent to Florida for outdoor exposure tests. Having passed all the hurdles, the finish then becomes the production standard for that color in a particular model year.

Studebaker-Packard currently uses both conventional and high-melamine baking enamels, but is using more and more of the latter type because of its improved resistance to chalking, discoloration in baking for two-toning, and alkali spotting, and because it is easier to repair.

Having selected the paints to be

Fig. 5—Two operators, one on each side of the line, do the small amount of prime sanding that is necessary after electrostatic priming. Sundstrand air-operated sanding tools are used; sand paper is used dry. Efficient, modern paint application methods produce a smooth primer coat which requires little sanding prior to spraying on the finish coat.

used, the men in charge of finishing at Studebaker-Packard are faced with the problem of how to apply them to get the best finish most economically. Here's how they are doing it:

Body Finishing

Before the body can be finished, it must first be welded together. The company uses rigid fixtures to hold the bodies together while they are being welded. After welding, workers use files and air-operated rotary polishing tools equipped with 90- and 140-grit wheels (Fig. 1) to polish welds and remove scratches in the formed metal. Bodies are mounted on floor pallet-trucks for their trip through the finishing process.

The first step in pre-paint treatment of the completed body (which includes doors, top, rear quarter panels and rear fenders, front cowl and firewall) is to remove heavy greases, dirt and identifying chalk marks. A worker hand-wipes the body with naphtha to remove these heavier soils.

Cleaning and Phosphatizing

Conventional alkali spray cleaning and spray phosphatizing is the next step. The unit used to do this (Fig. 2) is 180 feet long. It incorporates five spray treatment stages:

1. Alkali clean with Parco Cleaner 342.
   Temperature, 170 deg. F.
2. Rinse with water at 150 deg. F.
3. Phosphatize with Bonderite 105. Temperature, 130 deg. F.
4. Rinse with water at 100 deg. F.
5. Rinse in a solution of chromic acid at 120 deg. F.

Cleaning and rinse solutions are hurled at the bodies through V-jets,

Fig. 6—Body is cleaned with naphtha before it is wiped with a tack rag to remove any trace of dust that might cause roughness.

which are used to produce high pressure. The chromic acid rinse solution and phosphatizing solution are applied by whirling spray to

Fig. 7—Operators spraying finish-coat enamel. Booth is well lighted, has tacky substance on wall to pick up dust from the air. Area is air conditioned and under pressure.

give greater volume and coverage and maximum chemical action on the metal surface.

As the bodies come out of a five-stage unit, a fine mist spray of deionized water removes remaining salts. Studebaker-Packard has found this step to be helpful in avoiding paint blisters during the service life of the bodies.

Bodies dry off in a convection-type gas-fired oven 100 feet long. It takes 20 or 25 minutes for them to go through this unit, where the temperature is held at 320 deg. F.

The body is now dry. It has a coating of 150 mg./square foot of iron zinc phosphate, which serves two purposes: it prevents spread of under-film corrosion if the paint film is damaged, and it aids in securing better paint adherence.

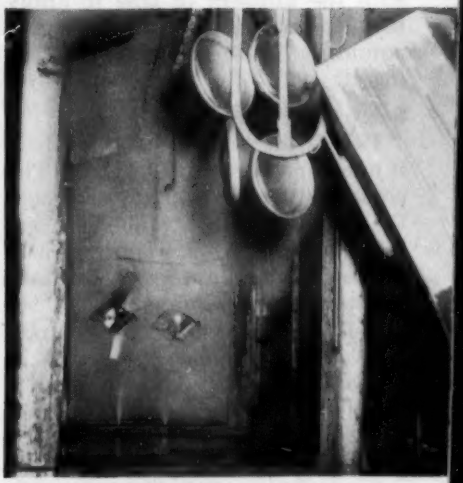

Fig. 9 — Sheet-metal parts begin their trip through the six-stage cleaning and phosphatizing tunnel. Note V-jet cleaning sprays.

Fig. 8—Fiberglass masks made to conform to the body, held on by Alnico magnets around the edges, are attached to car to mask it for a two-tone paint job. Masks are on doors.

After the body has cooled sufficiently, Casco sealing compound is applied to the drip rails, and all soldered joints are putty glazed. The body is now ready to be primed.

Priming

The gray Du Pont primer is sprayed on automatically in a Ransburg No. 1 electrostatic spray system (Fig. 3). The spray guns are mounted on the entrance and exit ends of two enclosed booths. Eleven spray guns, three above, three on each side, and two below, all aimed toward the bodies, spray out the particles of paint.

The paint is immediately attract-

ed to the grounded automobile bodies by the electrostatic field. Since each booth has two complete sets of guns, the body gets four coats of primer with space between the two booths to let the first two coats "flash off."

Two men, one on each side of the body, spray the inside and other places inaccessible to the automatic sprays.

"Fins" bolted to the rear fenders of Studebaker Hawk models are primed before being attached to the body, so as to get primer on the inside surface of the fin.

Baking

The bodies are baked in a Mahon gas-fired convection oven mounted on the floor (Fig. 4). They go through in two rows, side by side, pulled by floor conveyors. Baking time is 55 minutes at 280 deg. F.

Prime Sanding

Studebaker-Packard tries to keep prime sanding down to a minimum. By doing a minimum of sanding, the paint film thickness (approximately 2 mils) is maintained in most areas. Those areas where roughness is encountered are dry sanded. Workers use Sundstrand air-operated sanding machines (Fig. 5) and a minimum amount of hand sanding.

Removing Loose Particles

Dust caused by the sanding is first blown off with compressed air in an exhausted booth. From this point on, dust in the air is carefully

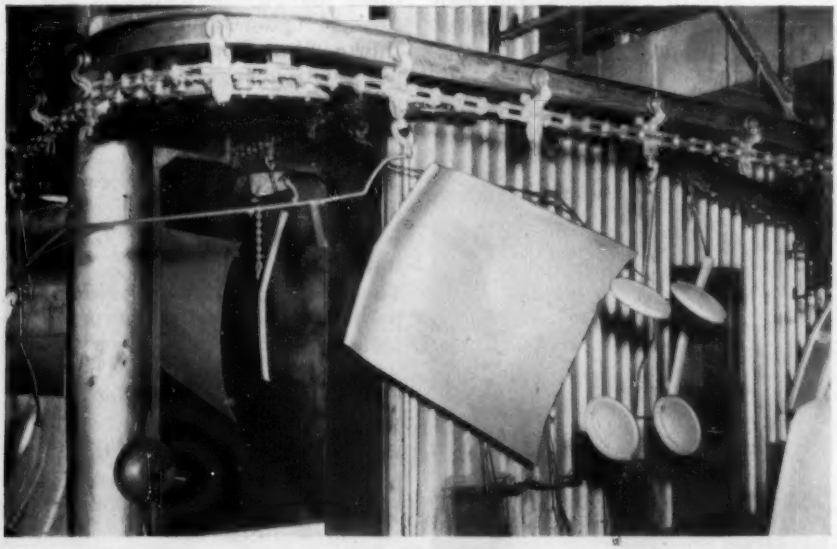

Fig. 10—Parts entering one of the flow-coat-prime chambers. Large draining room is on the other side of this unit. It allows excess paint to drain off the parts before they are baked. Finish produced is smooth, relatively free from runs and tears, requires little prime sanding. Vapor concentration in draining room is controlled at predetermined value.

". . . the advantage of using heated paint is the thicker film of paint applied with a single pass of the spray gun."

controlled. The enclosed areas where the bodies are wiped, and the paint spray booths, are air-conditioned and under pressure. All air entering is filtered in a Mahon make-up air system to remove particles that might cause defects in the paint. In addition, the walls are treated with a substance called Tack-Lac, which keeps the walls "tacky" and traps dust particles floating in the air.

To assure an absolutely clean surface for the finish coat, bodies are first wiped with naphtha and then with cloths treated to be slightly "tacky" (Bond Tack Cloth) so as to hold dirt particles. The area where this is done (Fig. 6) is immediately in front of the spray booths.

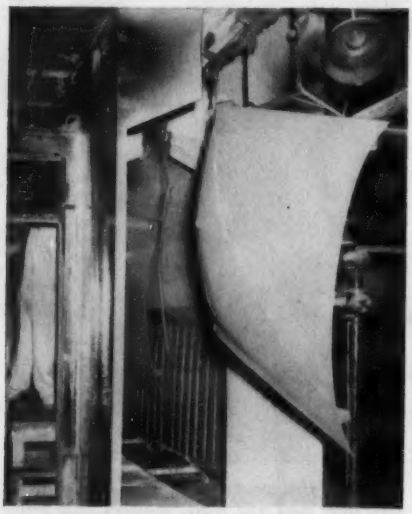

Fig. 11—Hoods entering the Mahon water wash spray booth for finish-coat spraying.

Spraying Finish Coat

In the first well-lighted booth the bodies enter (Fig. 7), the first color is sprayed on two-tone automobiles. Twelve spray-gun operators in each booth spray the entire body as it travels through. Paint used in finishing the bodies is supplied from a central mixing room and is pumped to the spray booths.

Heated paint is used to spray the bodies. The paint is heated by a DeVilbiss hot spray system before it gets to the spray gun. It constantly recirculates between heater and gun to keep it at an even temperature (140 deg. F.). Studebaker-Packard finds that the outstanding advantage of using heated paint is the thicker film of paint that can be applied with a single pass of the spray gun. It's easier for the painters to get the 2 mils required by company specifications.

After spraying, the bodies go into another convection oven (Fig. 8) for baking at 290 deg. F. for 19 minutes.

To apply the second color (Fig. 8) on two-tone bodies and paint the inside surfaces, the bodies are again wiped with tack cloths. Then they travel through two more spray booths similar to the one used to apply the first color (except that paint is not heated here) and then through the baking oven for 36 minutes at 260 deg. F.

All spray booths are down-draft water-wash units. Water used in the water curtain is filtered and recirculated, but the paint is not re-

claimed, since so many colors are used. The filtration and recirculation systems for the booths are in the basement of the plant.

Painting Sheet Metal Parts

Sheet metal parts for Studebakers and Packards are painted in another building. This complete finishing system is used to paint die castings, hub caps, gravel deflectors, hoods, front fenders, and other miscellaneous parts. All parts travel through the system attached to overhead chain conveyors.

Metal Preparation

Many portions of this finishing installation are similar to their counterparts in the system used for painting bodies. Phosphatizing, for instance, is identical to the process used for the bodies except that parts are rinsed twice following the alkaline cleaning. The washer (Fig. 9) is a U-shaped unit, over 200 feet long. It processes a sufficient number of parts to supply four paint lines. The roof-mounted oven used to dry parts after phosphatizing heats the parts to 350 deg. F. for 12 minutes.

Flow-Coat Prime

Parts are removed from the conveyor (gloves are worn to prevent finger-marking the phosphatized surfaces) that takes them through the phosphatizing process and placed on four separate conveyors (according to the type of part, for flow coat priming (Fig. 10). The dark gray O'Brien primer is squirted out at the parts through conventional stationary flow-coating nozzles. The parts then travel through a large drain room for about twenty minutes. This allows excess paint to drain from them. Evaporating sol-

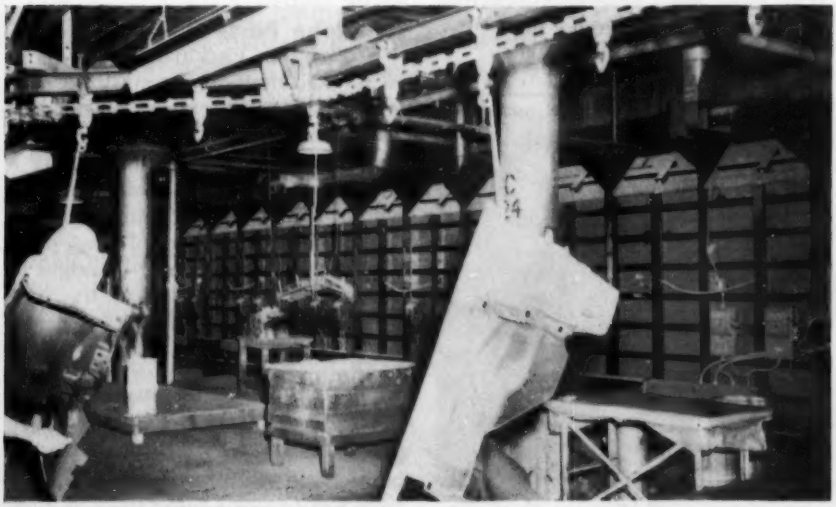

Fig. 12—Part of 200-foot-long Festoria infrared oven used for baking dark-colored parts when plant is producing at capacity, and baking load is greatly increased.

"Fiberglass masks are shaped by molding . . . over a part that must be masked . . ."

vents from the painted parts keep the atmosphere in this room suitable for allowing the parts to drain off and smooth out sufficiently.

The flow-coated parts are baked in an indirect gas-fired convection oven at 350 deg. F. for 55 minutes. The flow-coat prime finish is smooth, has few runs and tears, and meets film-thickness requirements (1 mil).

Any runs or tears that do develop are dry-sanded with air-operated sanding machines. As in the body-finishing department, only a minimum of prime sanding is done here.

Finish-Coat Spraying

After naphtha wiping and a tack-cloth treatment, the parts move into the finish-spray booths (Fig. 11), which are water-wash booths similar to those used in finishing bodies.

Parts are hot sprayed here also.

"Hadley will work out O.K. for this spray job once he gets off his artistic binge."

The paint heaters raise the paint temperature to 160 deg. F., which reduces the viscosity of the paint from an initial reading of 30 to 34 seconds cold to 20-25 seconds at 160 deg. F. Paint is applied from individual pressure pots rather than a central supply system.

Baking

The finish coat is baked in a convection-type oven at 250 deg. F. for 45 minutes. Inspectors look for defects at this point so that the defective parts will not be used in assembly. Those parts with small defects are sanded and sent through the finish-coat booths again. Parts with more serious defects are stripped down to bare metal in potash solutions and sent back through the entire system.

Two-Tone Parts

Studebaker-Packard has developed its own method for masking two-tone parts. Fiberglass masks are shaped by molding vinyl-resin-impregnated fiberglass laminates over a part that must be masked, such as a fender, and then hardening to give the mask the shape of the part. Alnico magnets around the edges of the mask keep it close to the part being masked. It's a quick way of producing the two-tone parts with a minimum of effort and expense. Similar masks are used on the bodies, also. After the fiberglass mask has been attached to the part, the part goes through the entire system, from finish-coat booths through baking ovens a second time, to get the second color.

Infrared Oven for High Production

When the plant is producing at full capacity, a 200-foot-long Fostoria infrared bulb oven (Fig. 12) is put into service to increase baking capacity.

Painting Chasses

Studebaker-Packard chasses are electrostatically painted, using a Ransburg No. 2 system (Fig. 13). Five of the bell-type atomizers, 3 beneath the chassis and two above, spin out the fine spray of paint particles, which are immediately attracted electrostatically to the grounded chassis. The system is controlled by a photoelectric cell that actuates the spraying system only when a chassis moves into the booth. A polyethylene shield around the conveyor is helpful in deflecting paint back down onto the chassis and protecting the conveyor.

A black, fast-drying, air-dry enamel is applied so that the chassis can go to the assembly line immediately.

Painting Engines

Studebaker-Packard sprays its engines with air-drying O'Brien aluminum paint, which is applied in a 15-foot water-wash spray booth. Metal masks that slip on and off protect such parts as distributor and generator during painting. The bright aluminum finish makes the engine clean and bright for display in the dealer's showroom.

Inspection and Repair

As the finished automobile rolls off the assembly line (Fig. 14), a team of inspectors checks just about every inch for defects or damage (Fig. 15). Any automobile that has been scratched during assembly or has any other defect in the finish is

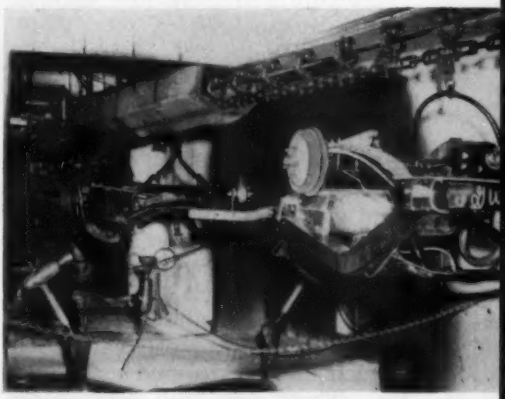

Fig. 13—Chasses are painted black in the Ransburg No. 2 electrostatic painting installation. Bell-shaped units spin out the paint in a fine spray. Spray in highly-charged electrostatic field is immediately attracted to the frame. Note polyethylene shield around the conveyor. Shield helps to push the paint down toward the chassis being painted.

Fig. 14 — Completely assembled cars move down the assembly line to final inspection.

sent to a repair line, which is specially equipped to refinish sections of the car quickly.

In wet weather, the first step in repairing a defect is to dry the automobile. This department has two infrared ovens through which the cars pass to thoroughly dry off any moisture. This oven, of course, is used only when needed.

From this point on, the procedure for correcting any defect is uniform. It is much the same, on a smaller scale, as the process used to finish the car originally. Air sanders are used to sand out the defect. Then men with tack cloths wipe away all loose dirt from the area being repainted. In every case, an entire section of the car is repainted (an entire hood, or the whole rear quarter panel, for instance). The area about this is protected from overspray with masking tape and paper.

Primer is sprayed from small pressure tanks. The finish-coat is baking enamel, the same as used in production except that it has extra amounts of either catalyst or converter to speed drying. The various colors are contained in agitated five-gallon pressure pots.

As the final step, the car is baked in a steam-heated oven that includes a bank of infrared bulbs to bring the car up to baking temperature rapidly. The oven is operated at about 220 deg. F. The job itself reaches a temperature of about 180 deg. F., and is held at that temperature for 20 minutes.

Fig. 15—Inspectors look over the car carefully. Any defects in the finish are repaired on a separate line set up specifically for the purpose. (Photographs by PRODUCTS FINISHING)

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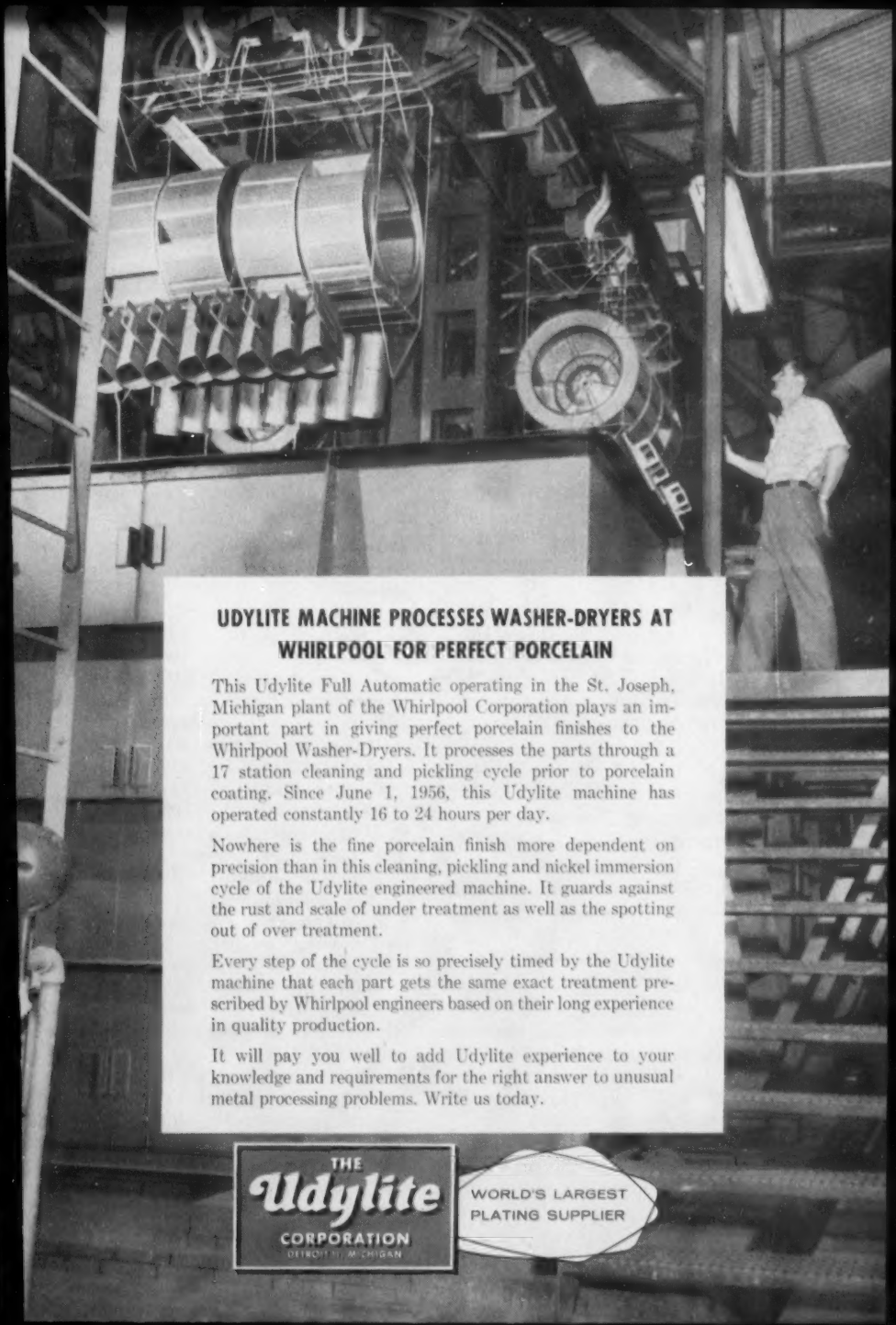

UDYLITE MACHINE PROCESSES WASHER-DRYERS AT WHIRLPOOL FOR PERFECT PORCELAIN

This Udylite Full Automatic operating in the St. Joseph, Michigan plant of the Whirlpool Corporation plays an important part in giving perfect porcelain finishes to the Whirlpool Washer-Dryers. It processes the parts through a 17 station cleaning and pickling cycle prior to porcelain coating. Since June 1, 1956, this Udylite machine has operated constantly 16 to 24 hours per day.

Nowhere is the fine porcelain finish more dependent on precision than in this cleaning, pickling and nickel immersion cycle of the Udylite engineered machine. It guards against the rust and scale of under treatment as well as the spotting out of over treatment.

Every step of the cycle is so precisely timed by the Udylite machine that each part gets the same exact treatment prescribed by Whirlpool engineers based on their long experience in quality production.

It will pay you well to add Udylite experience to your knowledge and requirements for the right answer to unusual metal processing problems. Write us today.

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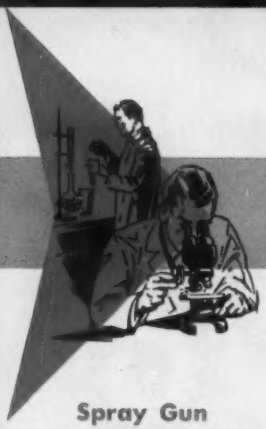
WORLD'S LARGEST PLATING SUPPLIER



finishing clinic

Suggested solutions to problems submitted by readers. Send your problem to our Editorial Staff. There is no charge.

Spray Gun

Question: *We have heard of a mistless spray gun being used in England for touch-up work.*

We would appreciate any information you can supply as to whether this unit is available in the United States and, if so, from whom it can be purchased.

E. M. R.

Answer: We feel certain that the U. S. manufacturers of spray equipment listed in the 1957 PRODUCTS FINISHING DIRECTORY will be able to supply you with a spray gun suitable for your purpose.

★ ★ ★

Photoengraving Procedures for Aluminum

Question: *We are interested in obtaining information on photoengraving procedures for aluminum.*

A list of suppliers of photoengraving equipment and materials will be greatly appreciated.

M. H. S.

Answer: We are enclosing tearsheets of the article "Design Metal Etching" which was published in the May issue of PRODUCTS FINISHING. This may be of assistance to you.

We are also referring you to a source of additional information on this subject.

Bronze or Antique Finish

Question: *We are most anxious to learn the proportions of the necessary ingredients needed to finish our items in brown, bronze and antique. Your advice will be greatly appreciated.*

J. A. R.

Answer: A black finish on brass may be obtained from the following solution:

Copper carbonate	½ oz./gal.
Liquid ammonia	4 liquid oz./gal.
Soda ash	¼ oz./gal.
Temperature	190-200 deg. F.

A brown or brass or copper may be obtained from the following solutions:

Potassium chlorate	2¾ oz./gal.
Nickel sulfate	2¾ oz./gal.
Copper sulfate	24 oz./gal.
Temperature	195-212 deg. F.

A bronze color may be obtained from the following solution:

Potassium sulfide	½ oz./gal.
Red ammonium sulfide	¼ oz./gal.
Yellow antimony sulfide	¼ oz./gal.
Liquid ammonia	½ fluid oz./gal.

Parts being processed should be dipped wet and scratch brushed repeatedly.

Several suppliers of finishing solutions and equipment have developed special processes for obtaining almost any desired color on copper or copper alloys. Therefore, we strongly recommend that in considering this problem

you obtain advice and suggestions from the companies to whom we are referring you.

★ ★ ★

Sealing Parts Prior to Plating

Question: *We are anxious to secure complete information for impregnating or sealing parts made of sintered iron or bronze prior to cadmium or zinc plating. Will you please forward any information you have on this subject and a list of possible suppliers of materials for this purpose.*

W. L. B.

Answer: We are referring you to companies who will be able to offer information on sealing and sealing equipment. Also, a number of plating supply companies have done work on the plating of sintered parts. We are also listing these organizations for assistance with this phase of the process.

★ ★ ★

Waste Disposal

Question: *We have a problem of waste disposal of metal salts and cyanides in rinse water. There is no regular sewage disposal in the area, only septic tanks.*

Any suggestions on this problem will be appreciated.

A. F. H.

Answer: The first step is, of course, to check with the local authorities to determine what regulations govern plating shop operations in your area. After you have determined what limitations are placed on waste products from your plant, you may wish to contact a number of companies from whom you can secure specific suggestions as to how to get rid of your waste products.

It is quite possible that by thorough rinsing and the use of dragout rinses, you can hold the metal salt concentration in your waste water to a very low figure. The problem of disposing of cyanides in the rinse water can be solved either by the use of chlorine gas metered through a special type machine or by the use of chlorine-containing tablets.

★ ★ ★

Protective Coating for Agricultural Sprayers

Question: *We are in need of a protective coating (paint or plastic) for our agricultural sprayers. The sprayers are for rough, outside service, and are made of low-carbon-steel sheets. The protective coating will have to withstand all the usual agricultural spraying solutions used including:*

Highly aromatic hydrocarbons containing high percentages of heavy oil-fractions (e. g. 100 per cent xylene)

Dilute acids (e.g. 15 per cent HCL)

Dilute bases (e. g. 10 per cent ammonia solution)

We should prefer air-drying coatings.

Z. Y.

Answer: We have referred you to manufacturers who can recommend a paint to fill your specific requirements.

★ ★ ★

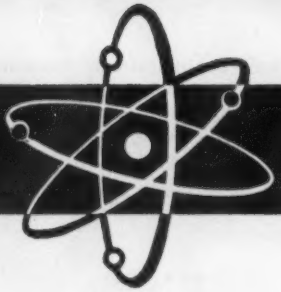
Dye for Cadmium

Question: *One of our customers desires a color identification for cadmium plated steel. A purple dye similar to Federal Specification No. TT-C-595 Shade No. 2715 has been specified for this job.*

Would you tell us who produces such a finish?

D. V. R.

Answer: We are sending you names of companies who supply purple dye for cadmium plated steel.



Part II

By FRED G. BRUNE
Quality Manager
Chrysler-Operated Naval
Industrial Reserve Aircraft Plant

Ions and Their Movements in Plating

Before discussing how ions move through a plating solution, it might be well to get a clearer idea of their size. The air we breathe is made of molecules, each of which has two or three atoms. Now, if we could change the *molecules* in just *one cubic inch* of air into grains of sea sand, the resulting sand would fill a trench three feet deep and a mile wide from New York City to San Francisco.

The atom was once thought to be the smallest part of matter that could exist. Now we know that the nucleus of an atom is one-ten thousandth the size of the atom.

Ions, as previously noted, are very important in plating. For us to be able to plate, it is necessary that electricity be conducted through the solution. The current is carried through the solution by ions. The passage of the current through the solution is accompanied by movement of the ions, so that when the current leaves the solution the ions become atoms. This type of operation is electrochemical in nature, a result of both electrical and chemical effects. To us the important fact is that electrodeposition is produced by the solution conducting current. The quantity of electricity which the solution will carry is de-

FRED G. BRUNE has been active in the plating industry for more than 25 years. He attended the University of Cincinnati as a cooperative student in the Department of Chemical and Metallurgical Engineering. He has been associated with the Lockland Div., Electric Auto-Lite Company and Marion Industries, Division of Motor Products Corporation. For the past several years, he has held a staff position at Chrysler Corporation.

Mr. Brune is a past-president of the Cincinnati Branch, American Electroplaters' Society. As a member of the Detroit Branch, he gave a most successful course in Electroplating last year. Mr. Brune is a member of the Electroplating Course Committee of the A. E. S.

pendent upon the following:

1. The charge carried by the ion.
2. The velocity at which the ion moves.
3. The number of ions in the solution.

Actually, each one of these factors could be discussed for days, but in general it may be said that an ion carries a number of charges equal to its valence. The atom obtains a stable orbit arrangement by gaining or losing this number of electrons. While the ions do move, they do not move fast enough; therefore, platers agitate the bath by various methods. As to the number of ions: in practical terms, the number of ions is controlled by solution concentration.

Faraday's Law

The charge carried by each ion is considered by the plater daily when he decides how long to plate a part in the solution to obtain a certain thickness. This is based on work by Faraday, who, in 1833, proved that *"the weight of metal deposited at the cathode, or dissolved from the anode, is proportional to the quantity of electricity and to the chemical equivalent weight of the metal."*

The term "chemical equivalent weight" may need some explanation, but basically it means the weight of an element that unites with or replaces a unit weight of hydrogen in a chemical compound.

Years ago chemists noted that certain weights of material will combine to produce a new compound. The accurate determination of these combining weights has provided us

Author's Note: *This material was used in a lecture course in Electroplating, given as a part of the educational program of the Detroit Branch, A. E. S. The lectures were designed to explain in simple terms the principles of electrochemistry, and demonstrate to the plater the usefulness of these principles. During the course each student was given a copy of "Fundamentals of Electrochemistry and Electrodeposition," by S. Glasstone, as a source of more extensive explanation of electrochemical principles.*

Table I

Copper Solution	Valence	Equivalent Weight	Electrochemical Equiv.
Cyanide	1	63.54	0.659 Milligram/Coulomb
Acid	2	31.77	0.329 Milligram/Coulomb

with the *"atomic weight"* and the fact that the *equivalent weight* of an element is either the same as its atomic weight or some simple fraction of this weight. This fraction is determined by the valence of the element: *the atomic weight of an element divided by its valence is the "chemical equivalent weight."*

Equivalent weights of material react together. Similarly, equal amounts of electricity cause the same amount of deposition. This means that the amount of anode dissolved by a current or the amount of metal plated at the cathode is proportional to the quantity of electricity passing through the solution. *The quantity of electricity that will deposit one equivalent weight of a metal in grams is known as a "Faraday."* Numerically, it is 96,500 coulombs (or 26.8 ampere hours). *A coulomb is the quantity of electricity passing when a current of one ampere flows for one second.* Copper, with an atomic weight of 63.54 is a good example, since most platers use both the cyanide and acid solutions. A cyanide copper solution deposits twice as much copper as an acid copper solution for a given flow of amperes (Table I).

Usually in plating we convert this number so that we get ampere-hours per square foot to deposit 0.001 inch of metal. As we will learn later, allowance must be made when we don't get 100 per cent efficiency.

Ion Velocity

The second factor which determines the quantity of electricity which may be carried in a plating solution is the velocity at which the ion moves. As we know, they do not move fast enough; therefore, we usually stir or agitate the solution. But ions do move and each ion is different. Usually, they do not move at the same speed toward the anode and cathode even though equivalent amounts are discharged for a given electromotive force or current. This fact was determined by measuring the change in chemical concentration that takes place at the electrodes when an electric current flows.

Originally, this was determined by dividing a plating cell into three equal parts and placing two porous diaphragms between the anode and cathode. These diaphragms prevented mechanical movement of the solution, yet did not interfere with the current flow. Since ionic mobility has little direct bearing on plating for industrial application, we will not go into this factor exten-

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Table II

Typical Transport (or Transference) Numbers		
Solution	**Cation**	**Anion**
Sodium Chloride (NaCl)	0.396	0.604
Hydrochloric Acid (HCl)	0.833	0.167
Caustic Soda (NaOH)	0.190	0.810

Table III

Ionic Speed Relative to Hydrogen Ion			
Cations		**Anions**	
H	100	OH	55.6
K	19.6	SO_4	21.7
Cd	15.1	Cl	20
Cu	13		

sively. However, if we have a solution and pass a known number of "Faradays" and check the analysis of the solution in the anode and cathode compartments, we can get a ratio of their respective mobilities. Actually, this means that the quantity of electricity carried by the two types of ions is proportional to their speed. The name given to the fractions produced by making such measurements is called the "Transport Number" (Table II).

In plating solutions, each ion present carries part of the current. In a nickel plating solution the hydrogen ion carries more current to the cathode than the nickel ion, although we try to deposit only the nickel ion. From such data it was found that the hydrogen and hydroxyl ions have faster transfer speeds. This also accounts for the fact that strong acids and alkalies are better conductors than solutions of salts. Since hydrogen is the fastest we can take it as 100 per cent and calculate the relative rates for other ions (Table III).

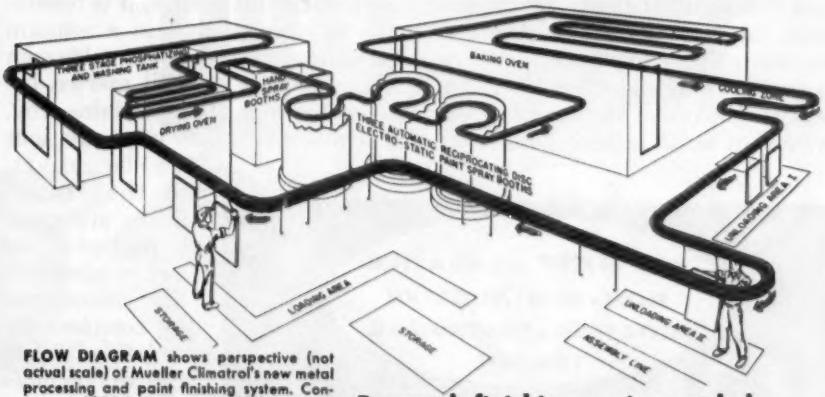
Actually, absolute velocities of the ions have been obtained in terms of distance per time per applied voltage. But since it would take hours or days for an ion to move from the anode to cathode, and all ions carry the current, the need for agitation to provide at the cathode the ions needed for plating is quite clear.

Number of Ions

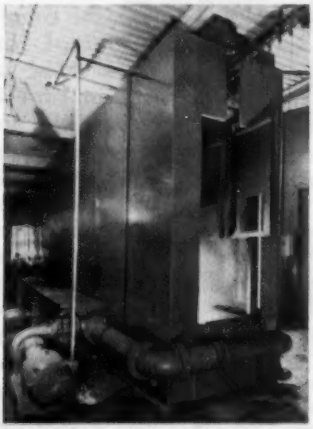
The third factor governing the amount of current that a solution can conduct is the number of ions. The behavior of solutions in this respect was first explained by a "theory of electrolytic dissociation;" this theory states that *part* of the molecules of a substance break up into ions when the material is dissolved in water or other solvents. This principle was supported by the observation that, in a dilute solution, a substance had a greater effect per unit weight on such physical properties as electrolytic conductance or freezing point than the same substance had per unit weight, in a concentrated solution. Thus it was possible to calculate the "degree of dissociation" of a solution as a fraction of the molecules present. This fraction increases as the concentration of the solution becomes less.

TWO SHIFTS TO ONE SHIFT

with no lost time . . . no lost production!



FLOW DIAGRAM shows perspective (not actual scale) of Mueller Climatrol's new metal processing and paint finishing system. Conveyor is 1300 ft. long; travels 15 ft. per min.



THREE STAGE cleaning and phosphatizing unit is 88 ft. long. Here, metal parts are detergent-washed, chemically treated to convert the surface of the metal to an iron-phosphate coating, rinsed and sprayed with a dilute chromic, phosphoric acid solution.

Despatch finishing equipment helps Mueller Climatrol make fast switch

Painting was a bottleneck at the Mueller Climatrol Division, Worthington Corporation, Milwaukee, Wisconsin.

They had to run two shifts, each 50 hours a week, and had a hard time keeping up on furnace casings and an increasing amount of air conditioning components.

Now they're running one shift, 40 hours a week, thanks to a new system that was put into action smoothly and quickly with no lost time . . . no lost production!

Despatch helped by designing and fabricating the washing and phosphatizing machine . . . the gas-fired dry-off oven . . . the spray booth enclosures . . . and the giant, automatically controlled baking oven.

Despatch can help you. There's a Despatch-trained resident engineer near you. Why not talk to him about your finishing requirements?

WRITE TODAY FOR BULLETIN 51C

16 colorful pages on modern ways to achieve better finishes, faster production and smoother handling of metal products . . . at lower cost.

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PIONEERS IN ENGINEERING FINISHING SYSTEMS FOR INDUSTRY

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The physical chemists and early electrochemists used a "Dissociation Constant" that expresses, as a ratio, the tendency of a material to dissociate to the tendency of its ions to recombine as molecules. This concept is still useful for weak electrolytes, but is of little value on the solutions used in plating. Our modern theory of electrolytic dissociation assumes that most salts in solution exist entirely as ions.

Since a salt consists of ions joined by electrostatic linkage, it is reasonable to suppose that in a solution the same electrical forces (although much weaker) are still exerted between the ions. This explains why, in a dilute solution, when the ions are far apart, so that interionic attraction is negligible, we get a condition that corresponds to "complete dissociation." When the salt becomes ions in a solution, the concentration of ions is increased and this in turn increases the ability of a solution to conduct electricity. But when you increase solution concentration by adding more of a salt, it forces the ions closer together and the interionic attractions decrease the independence of ion movement; therefore, doubling concentration does not necessarily double solution conductivity.

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YOUR OVERHEAD IS OVER HERE

The overspray in your water curtain is a cause of overhead cost. While the overspray cannot be eliminated, the cost of removing deactivated paint from the spray booth tank and the water circulating system can be.

Periodic filtration of paint spray booth wash water prevents deactivated paint from settling to the bottom of the tank by removing the paint matte while it is floating. Recirculation of the paint in the system is prevented and water nozzles remain foul-free. Such maintenance costs are eliminated.

Only Delpark offers filtration for paint spray booth wash water. A Delpark field engineer will be glad to show you how you can save on operating and maintenance costs.

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Page 76

SPOTLIGHTING finishing progress

The Hinac Process . . . A Substitute for Tinplate

Recently developed chemical surface treatment shows promise for applications in many fields—particularly the can industry . . .

A chemical surface treatment that can be used as a substitute for the strategic material tin on a wide variety of base metals has been developed by Heintz Manufacturing Company, Philadelphia, Pennsylvania.

Called the Hinac Process, the coating method employs readily obtainable chemicals, requires a processing time of only a few seconds, and is done at room temperature.

The process was originally developed when industry feared that a shortage of tin caused by the Korean War would seriously jeopardize the supply of tinplate.

What Is the Hinac Process?

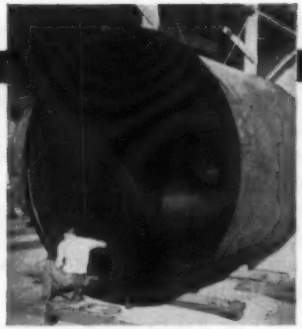
The Hinac Process produces an inorganic coating that consists essentially of chromium compounds. This coating is water insoluble, and offers excellent chemical resistance, particularly to alkaline media. It is equal to tinplate in economy and performance, it is reported.

The coating is smooth and imparts a high lustre to the surface of metals. It has good scratch resistance, good corrosion resistance, and good chemical resistance.

All steps in the process involve non-sludging and non-electrolytic baths operated at room temperature. No molten metal is used. Composition and thickness of the coating can be varied according to the product's use. Simplicity of operation is one of the process' outstanding properties.

The weight of the coating can be varied from a small value to several hundred milligrams per square foot. **Three properties** of the coating produced by the Hinac Process make it desirable for use by the can industry: excellent corrosion resist-

Series 105



TANK LINING QUIZ

Will your present tank lining meet all ten conditions below? It will, **and more,** if it's...

Amer-Plate
PVC TANK LINING

	Yes	No
1. Will it adhere directly to concrete without costly metal interlining?	☐	☐
2. Will it withstand hard chrome liquor to 160° F.?	☐	☐
3. Is it unaffected by strong acids and oxidizing materials?	☐	☐
4. Is it resistant to highly corrosive salts?	☐	☐
5. Will it resist alkalis, including 50% caustic soda?	☐	☐
6. Is it insoluble in aliphatic alcohols, glycol and glycerine?	☐	☐
7. Is it impervious to diesel oil, sour crude, aliphatic petroleum hydrocarbons?	☐	☐
8. Is it non-toxic in food and beverage service?	☐	☐
9. Is it also supplied with T-ribbed back, for casting into place in new concrete tanks?	☐	☐
10. Are expert applicators available in all major cities?	☐	☐

If your present tank lining material scores NO on any point that is important to you, it's time to consider the lining that passes ALL the tests... AMER-PLATE POLYVINYL CHLORIDE SHEET! For complete information and name of nearest applicator, write:

Amercoat®
CORPORATION

Dept. EK, 4809 Firestone Boulevard, South Gate, California

Evanston, Illinois • Kenilworth, New Jersey • Jacksonville, Florida • Houston, Texas

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ance of the coating itself; increased corrosion resistance when under enamel; and satisfactory iron-enamel adherence properties.

The Hinac Process is especially useful for treating strip where high corrosion resistance and good paint-bonding qualities are required.

Almost any metal can be treated by this process. Aluminum, zinc, stainless steel, copper, and magnesium have been successfully treated.

Metal surfaces which have been Hinac treated are difficult to solder unless the coating is first removed, either chemically or mechanically. The surfaces can be masked in areas that have to be soldered, however, so as to avoid this difficulty.

Applications of the Hinac Process are not limited to the can industry. It is suitable for use anywhere that metal can be treated continuously, in strip form. Performance of this tinplate substitute has been demonstrated by a series of tests comparing Hinac with untreated carbon steel.

In the first of these, the "synthetic corn test," enameled panels are placed in glass jars and a synthetic corn mixture is poured over them. A portion of the panel is left protruding above the surface of the test medium, simulating the

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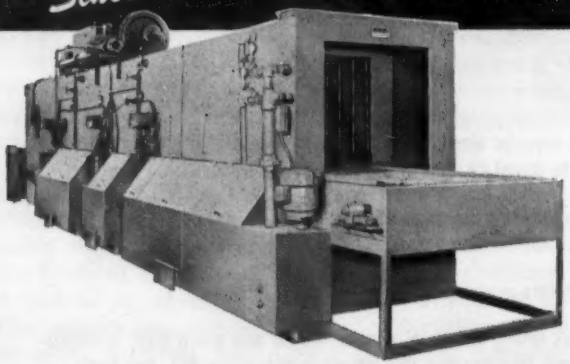

METAL PARTS WASHERS • PHOSPHATIZING UNITS
COMPLETE FINISHING SYSTEMS

If you have an application for cleaning, phosphatizing or pickling of steel surfaces, Dry-off ovens, Dip-coating, Flow-coating, Bake-ovens, individual units or complete systems, it will pay you to discuss methods, operating costs, maintenance costs, equipment requirements and layouts with CIRCO Engineers.

FOR CIRCO SALES ENGINEER OR BULLETINS AND QUOTATIONS, WRITE TO:
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Clark (Rahway), New Jersey

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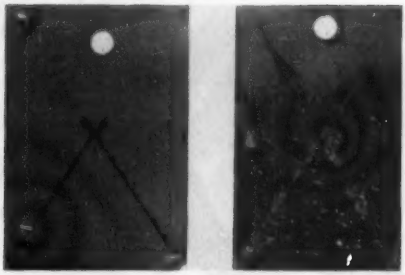


Fig. 1—Tests on enameled panels. Left panel was Hinac treated, then enameled; panel on right was enameled untreated. Diagonal scratches were made through the enamel to the steel surfaces. Panels were then immersed in a solution containing 3 per cent NaCl and 0.3 per cent H_2O_2 at 75 deg. F. for 18 hours. The panels are then rinsed, dried, and examined for degree of corrosion.

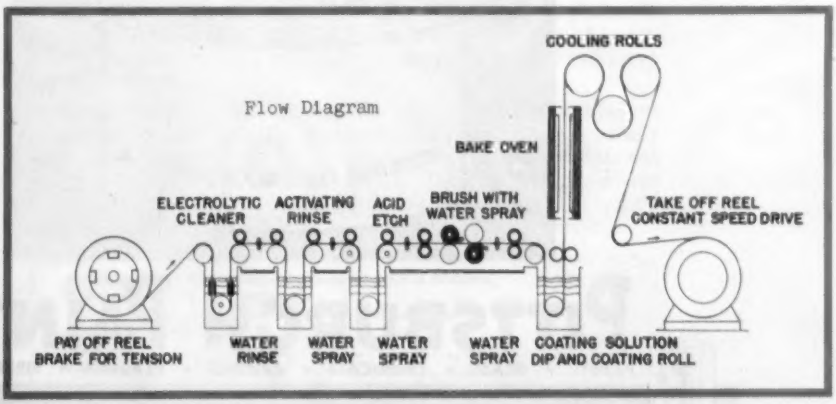
effect of head space in a can. The jars are closed and subjected to 15 pounds pressure for 70 minutes.

After cooling, the jars are opened and enamel adhesion is measured by a "tape" test. "Scotch" tape is applied to the surface in the area of the liquid-gas interface. The tape is then pulled off quickly, and the degree of failure is evaluated by the amount of paint pulled off the test panel. Hinac-treated panels showed no enamel failure; untreated panels failed completely.

A similar test carried out with meat showed much the same result. **In a third test,** diagonal scratches were made through the enamel to the steel surfaces. Panels were immersed in a solution containing 3 per cent NaCl and 0.3 per cent hydrogen peroxide at 75 deg. F. for 18 hours. The panels are then rinsed, dried, and examined for corrosion. Hinac treatment limited the corrosion to the area of the bare scratches; the untreated blackplate showed complete corrosion under the enamel film. (Fig. 1).

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

For further information on products advertised in this issue, use postpaid READER SERVICE CARDS inside Front Cover.



Flow diagram shows the steps necessary for treating metals by the Hinac Process.

DURA

PITTSBURGH PAINT

PPG PAINTS • GLASS • CHEMICALS • BRUSHES • PLASTICS • FIBER

PITTSBURGH PLATE GLASS COMPANY

IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED

Sets a new standard for industrial finishes in toughness, mar resistance and durability

• **Pittsburgh's new DURACRON** is a revolutionary departure from today's baked enamels. It is a basically new chemical composition developed for the finishing of refrigerators, home laundry equipment, ranges and air conditioning units.

• **It has superior adhesion** to bare metal or primer. It is remarkably tough and durable either as a one-coat enamel or over primer. It retains color and gloss for prolonged periods at temperatures up to 400°F. DURACRON also provides greater resistance to detergents, will not show stains from grease, fruits, mustard, etc. It withstands effects of salt spray, humidity and other corrosive atmosphere. In short, it's a sanitary, taste-free, mar-proof liner for food cabinets.

• **New DURACRON** can also be used advantageously on many other products to improve performance of enamels now used. We'll gladly provide you with additional information. Mail coupon below to Pittsburgh Plate Glass Company, Industrial Finishes Division, 1 Gateway Center, Pittsburgh, Pa.

Pittsburgh Plate Glass Company, Industrial Sales Division,
1 Gateway Center, Pittsburgh, Pa.

Gentlemen: Please send me additional information about your revolutionary new DURACRON.

Name_____

Company_____

Address_____

City_____ County_____ State_____

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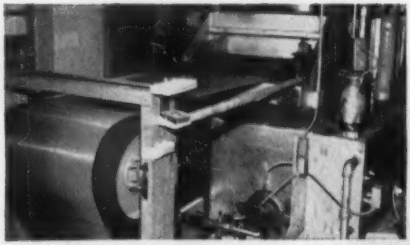
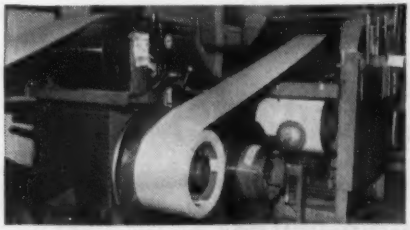
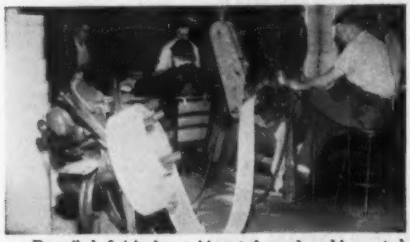


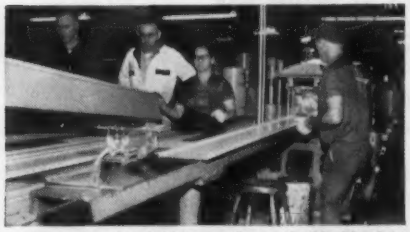
Strip is re-coiled after its treatment with Bonderite, corrosion resistant paint bond.



Painted metal is slit to desired width and coiled again as it emerges from finishing machine.



Re-coiled, finished metal is cut, formed, and inspected here. No loss of paint adhesion.



Painted stock is fed into punch press for blanking into various shapes and sizes.

Photos courtesy Hastings Aluminum Products, Inc.

Bonderized... Painted... Formed...

NO LOSS OF PAINT ADHESION!

Here's a production wrinkle that more and more manufacturers are using: Finish metal in the strip, then fabricate the product.

The technique applies equally well on steel and aluminum. First, run the strip through the Bonderite machine to produce the phosphate integral surface that supplies a secure anchor for the paint. Next, run the Bonderized strip through roll-coat painting and the bake oven. The painted coils of metal are ready for fabrication, and the finish doesn't crack, chip or craze as it is formed, drilled, and punched.

Fabrication after painting, made possible by Bonderizing, saves money by reducing labor, handling and manufacturing area requirements, and allows higher production rates.

Write or call for more information on how you can finish before fabrication in your plant.

Bonderite, Bonderizing, Bonderized—Reg. U.S. Pat. Off.

Since 1914— leader in the field

PARKER RUST PROOF COMPANY
2172 E. MILWAUKEE, DETROIT 11, MICHIGAN

BONDERITE	BONDERITE and BONDERLUBE	PARCO COMPOUND	PARCO LUBRITE	TROPICAL
corrosion resistant paint base	aids in cold forming of metals	rust resistant	wear resistant for friction surfaces	heavy duty maintenance paints since 1883

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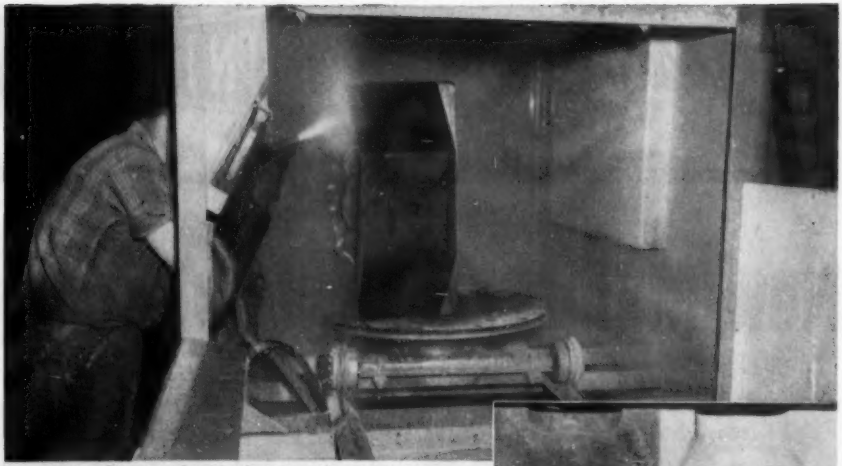
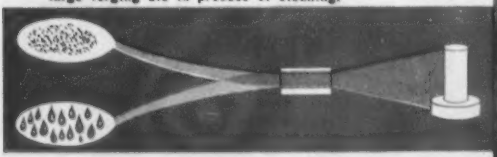
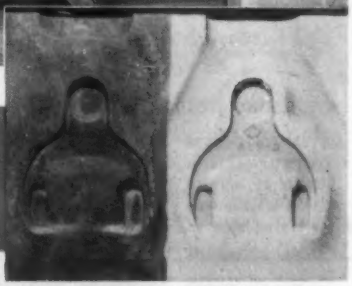


Above: Close-up of a blasting compartment, showing a large forging die in process of cleaning.





Above: Forging Die. One half before blast cleaning, other half after blast cleaning.

Wet blasting with EXOLON *FASTBLAST* reduces costly hand finishing time 97 to 99%

EXOLON (aluminum oxide) abrasive in particles so small they can be suspended in a slurry, are thrown at high speed against the work to be finished. Scales, burrs, carbons, oxides and smeared metal are removed, exposing the virgin metal in a minute, non-directional matte finish.

The rate of finish is controlled by varying air pressure; abrasive size, type and concentration; blast angle and distance of nozzle from work. The abrasive mesh sizes usually are 150, 180, 220 and 240.

Wet blasting produces a chemically clean surface to which plating and other coatings adhere in a permanent bond. Hand finishing requiring 1 to 6 hours was reduced to 30 seconds to 10 minutes by Wet Blasting.

Our technical and research staff will be glad to assist on any problems in the use of EXOLON or CARBOLON.

The EXOLON Company

943 East Niagara Street, Tonawanda, N. Y.
Thorold, Ontario, Canada

All photos courtesy Wheelabrator Corporation, manufacturers of LIQUAMATTE Wet Blasting Equipment.

Manufacturers of SILICON CARBIDE and ALUMINUM OXIDE ABRASIVES

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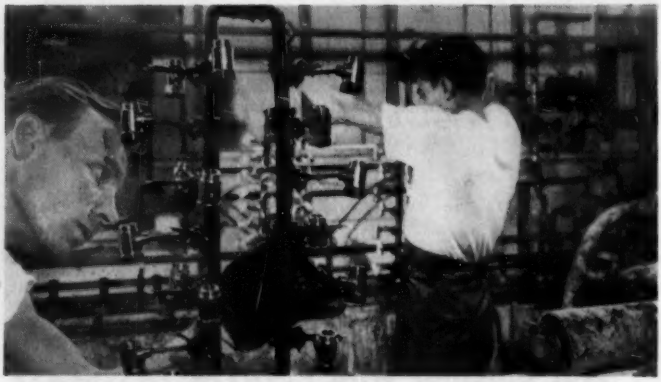
News about ®

UNICHROME
Trade Mark

New M&T bright cyanide copp



M&T Bright Cyanide Copper Process is already at work in sizable installations and a proved success.

Photo courtesy: Pottstown Plating Works, Inc.

Copper deposits now fit the need

Metal & Thermit now offers the most complete line of copper plating processes — has a deposit to meet all applications.

M&T "Golden Glow" Bronze is recommended for the optimum in speed, or throwing power to cover the most intricate work, or for a most attractive final finish. This is a copper-tin alloy process that is as easy to control as single metal plating.

Unichrome Pyrophosphate Copper stands out when density of deposit and smoothness are primary. It is preferred for such jobs as stop-off in nitriding, and for printed electrical circuits.

M&T Bright Cyanide Copper offers mirror brightness and excellent plating speed as an undercoat for decorative chromium finishes.

Bulletins available on each.

faster and more economical

Metal & Thermit bath uses entirely new addition agents for stability, more dependable operation

Users report that the new M&T Bright Cyanide Copper reduces operating costs and assures uniformly high plating quality with a minimum of control. The low cost solution can be made up with potassium, sodium, or a combination of the two salts.

The cost of operation is low due to long life and stability of the addition agents.

The deposits may be mirror-bright, if desired, or of a lesser degree of brightness, depending upon the specific requirements of each installation. The stability of the solution has enabled platers to obtain brighter deposits with greater consistency than ever before.

A wide bright range at high cathode efficiency assures high rates of deposition without burning on edges or dullness in recessed areas. High current densities may be used.

The process provides excellent anode corrosion, utilizing a new bath additive, NEOCHEL, which replaces Rochelle salts. The exceptional stability of this and other additives assures freedom from difficulty due to the accumulation of decomposition products in the bath.

Process control has been simplified. Only one chemical determination and a single Hull Cell test are required for control of the additives.

Unichrome is a trademark of Metal & Thermit Corp.

METAL & THERMIT
CORPORATION
General Offices: Rahway, New Jersey
Pittsburgh • Atlanta • Detroit
East Chicago • Los Angeles
In Canada: Metal & Thermit—United Chromium of Canada, Limited, Rexdale, Ont.

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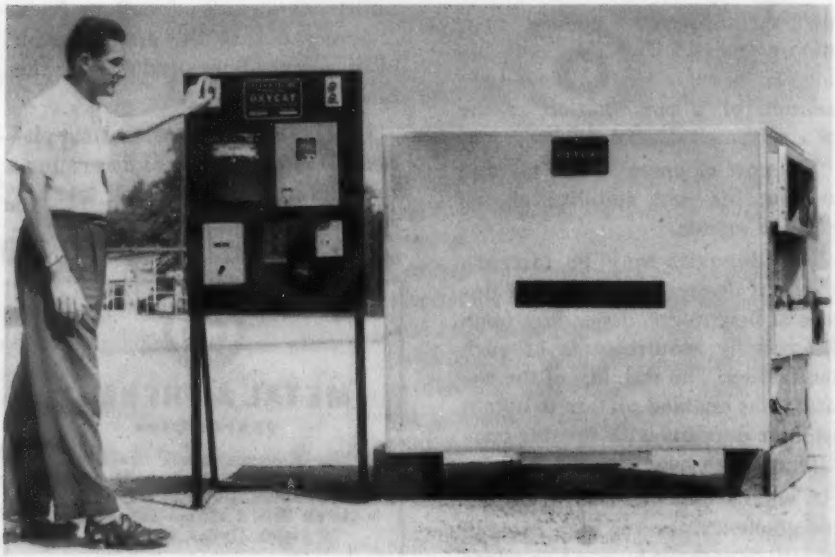
New Equipment, Materials, Processes

Polishing, Buffing, Degreasing, Cleaning, Barrel Finishing, Plating, Anodizing, Phosphatizing, Baking, Vacuum Metalizing, Chromate Coatings, Paint Finishing, Waste Treatment

"Packaged" Air-Pollution Control Unit

A packaged air-pollution control system for oxidizing solvent fumes, varnish vapors and other objectionable effluents in the exhaust gases of wire coating ovens has been developed by Oxy-Catalyst, Inc., Wayne, Pa.

Designated as Type EW-51 Catalytic Oxidation Unit, it can be used on almost all electrically heated vertical wire coating ovens and, with minor adaptations, on most gas-fired verti-



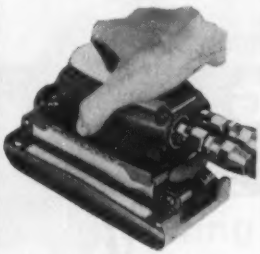
"Packaged" Oxy-Catalyst Air Pollution Control Unit: catalytic oxidation of fumes

SUNDSTRAND

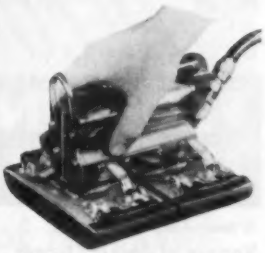
Choose from six sizes of "Job-proved" Air Sanders ...then watch output climb!

Six sizes of Sundstrand Air Sanders—weighing from 3 to 30 lb—all suitable for wet or dry sanding, give you unmatched freedom of choice. Let us show you advantages of each—without obligation, of course.

OS-800—lightest weight orbital air sander on the market, at only 3 lb, packs the power and speed needed for production jobs.

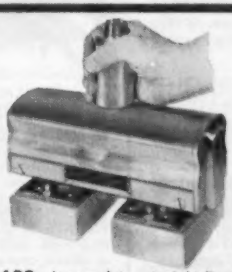


OS-700—single-pad orbital sander, weighing 5 lb, operates over 6000 cycles per minute.

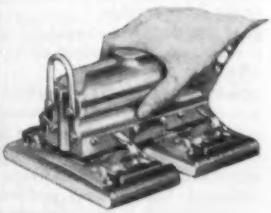


1000—straight-line sander with big abrasive area, operates at 2500 oscillations per minute, palm lever control, 7½ lb.

SP-101—straight-line, single-pad sander, 3000 oscillations per minute, 5 lb.



600—heavy-duty, straight-line unit for sanding, pumice rubbing, or polishing, 1100 oscillations per minute.



4000—straight-line, two-pad sander with longer, slower stroke; 2100 oscillations per minute, 9 lb.

SUNDSTRAND MAGNETIC-PNEUMATIC PRODUCTS

Division of Sundstrand Machine Tool Co. · 1020 Ninth Street, Rockford, Illinois

SUNDSTRAND

A name to remember in **AIR SANDERS**

For more data circle 347 on Postpaid Card

cal ovens. Completely assembled in the Oxy-Catalyst factory, the unit is shipped ready to install on top of the oven.

The Oxycat unit removes the objectionable stack components by catalytically oxidizing or burning them to an invisible, odorless exhaust of water vapor and carbon dioxide. The process takes place below normal ignition temperatures. The catalyst has long life, it is stated.

The EW-51 packaged Oxycat unit will oxidize up to five and a half gallons of solvent per hour from the oven outlet. Since this is more than the concentration of solvent vapors normally encountered in production, the EW-51 has enough capacity for most vertical furnaces. By changing the inlet hood connection the one standard unit can be fitted to GE types I, M, BC, and H ovens and other electrically heated vertical ovens.

Measuring 47 inches high by 25½ inches wide by 59 inches long, the unit consists of a catalyst bed, electric preheat burner, motor, blower, damper.

As the oven gases pass over porcelain rods, combustion of unburned vapors and fumes occurs at the catalyst-coated surface. The Oxycat will burn almost any organic contaminant but it is most effective on those which can be oxidized to either carbon dioxide or water or both. These include the entire family of hydrocarbons, as well as carbon monoxide—prime causes of industrial air contamination.

The minimum operating temper-

NEW PECO MODEL 7

FLOCKING MACHINE

A Standard Unit For A Variety of Flocking Needs

Now, with a new PECO, you can quickly add extra beauty and sales appeal, dampen sound and vibration, or add an inexpensive flock coating to your product. Especially designed for small lot or medium production spray-coat work, the PECO is quality built to assure dependable results.

EASY TO OPERATE—finger-tip feed control on discharge nozzle, built-in air blower, 110-volt plug-in connections.

COMPACT, PORTABLE—mounted on two casters, weighs less than 100 pounds.

QUICK-CHANGE DUMP HOPPER — saves time, eliminates waste when changing colors.

REGULATED, EVEN FLOW—nylon brush feed, adjustable baffle control, and protective screen assure smooth results without wasting flock.

SAFE, DEPENDABLE—overload-protected, heavy-duty motors, continuous running spark-proof blower, safety engineered feed.

FREE BULLETIN—Outlines simple operating details, gives complete data! Or for help with any problem our 25 years of specialized experience is available to you.

TYPICAL APPLICATIONS

- FOR COLORIZING—toys, novelties, containers, display panels, Christmas trees, etc.
- FOR SOUND AND VIBRATION DAMPENING—of metal, wood or plastic materials for interior panels, grilles, phone booths, etc.
- FOR MAR-PROOFING—lining tool or tackle boxes; jewelry, silverware and optical cases; base-coating lamps, desk sets, etc.

PECO

PROGRESSIVE EQUIPMENT COMPANY
8629 Mackinaw at Grand River
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BUILDERS OF STANDARD & SPECIAL FLOCKING EQUIPMENT

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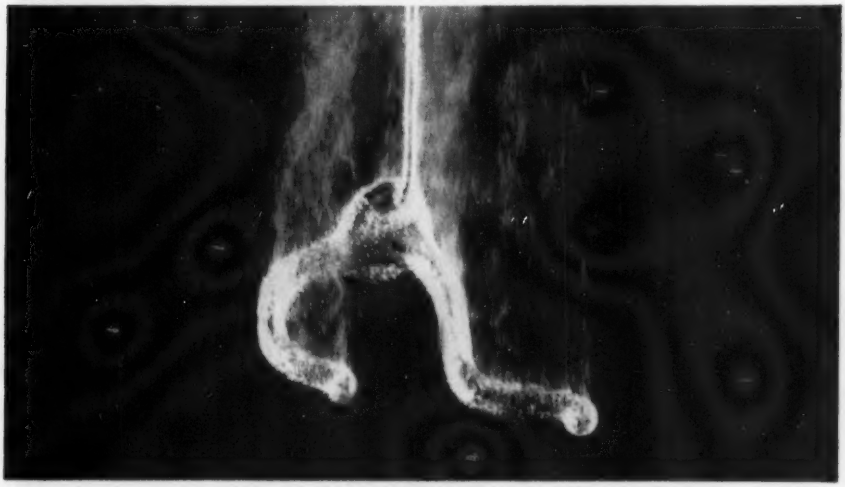
REPORT NO. 2/ON LOWERING TODAY'S COST OF PRODUCTION



Improved electrocleaning of recesses and low current density areas

Despite careful racking and well-planned production, deep recesses and places of normally low current density on intricately shaped parts are always trouble spots.

Diversey electrocleaners are specially fortified with exceptionally high wetting and emulsifying powers to do an effective job at those "problem places." This chemical cleaning supplements high current carrying capacities to give more efficient cleaning in a shorter time. Work emerges water-break-free and smut-free, ready for subsequent baths.

Controlled foaming is an added safety feature of Diversey electrocleaning solutions. The limited foam blanket serves as a safeguard against explosion dangers even in those occasional cases where current density is stepped up to speed production. When used according to recommendations, Diversey electrocleaners operate safely through a wide range of current densities . . . always exhibiting a high, stable conductivity.

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Metal Industries Div.
The Diversey Corp.
1820 Roscoe St.
Chicago 13, Ill.

PLANTS IN CHICAGO, NEWARK AND SOUTH GATE, CALIFORNIA. WAREHOUSES IN PRINCIPAL CITIES.

DIVERSEY. ELECTROCLEANING

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ature of the catalyst is 500 deg. F. A pre-heat burner is provided to raise the oven gases to that temperature when necessary. Once combustion has started it will sustain itself without the pre-heater, provided the outlet temperature of the catalyst chamber is above 800 deg. F.

The EW-51 standard unit can be operated at temperatures as high as 1500 deg. F. without harm to the catalyst chamber or other components.

Complete information on the EW-51 packaged unit is available from Oxy-Catalyst, Inc., Wayne 13, Pa.

For more data circle 1 on Reader Service Card

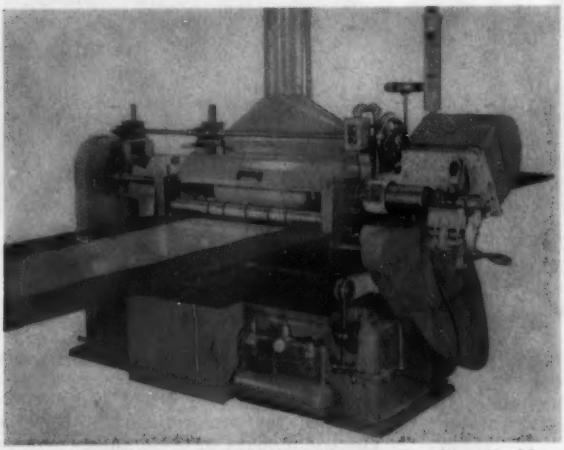
★ ★ ★

Recast Anodes

A process developed by Wagner Brothers Inc., Detroit, Mich., for re-casting the copper and zinc anodes is reported to provide metal shapes that improve metal deposition and eliminate other plating problems.

Referred to as "flat - tops" by Wagner production engineers, because of their cut-off, bullet-like shapes, the metal anodes are said to expose more metal to the plating bath for a given area. In other words, their shapes are such that more metal per anode can be "packed" into the area provided by the anode container.

Because of the anode dimensions produced by the process, the company says these anodes are easy to handle. They drop immediately to the bottom of the anode container in the plating



Clair Model 209 Pinch-Roll Thru-Feed Surface Finishing Machine

for SHEET or COIL STOCK

Incredibly versatile - - - the CLAIR model 209 will handle ANY type of surface finishing operation - - PLUS broadened applications for delusterization of transparent plastic film, printed circuitry applications, etc., etc. It will accommodate any type or kind of long sheet and continuous coil stock in metals, plastics - - - or whatever you have in mind for surface finishing.

CLAIR

For information on YOUR Surface Finishing Problem write, phone or wire.

MANUFACTURING CO., Inc., OLEAN, N.Y.

Offering the Most VERSATILE Line of Surface Finishing Machines

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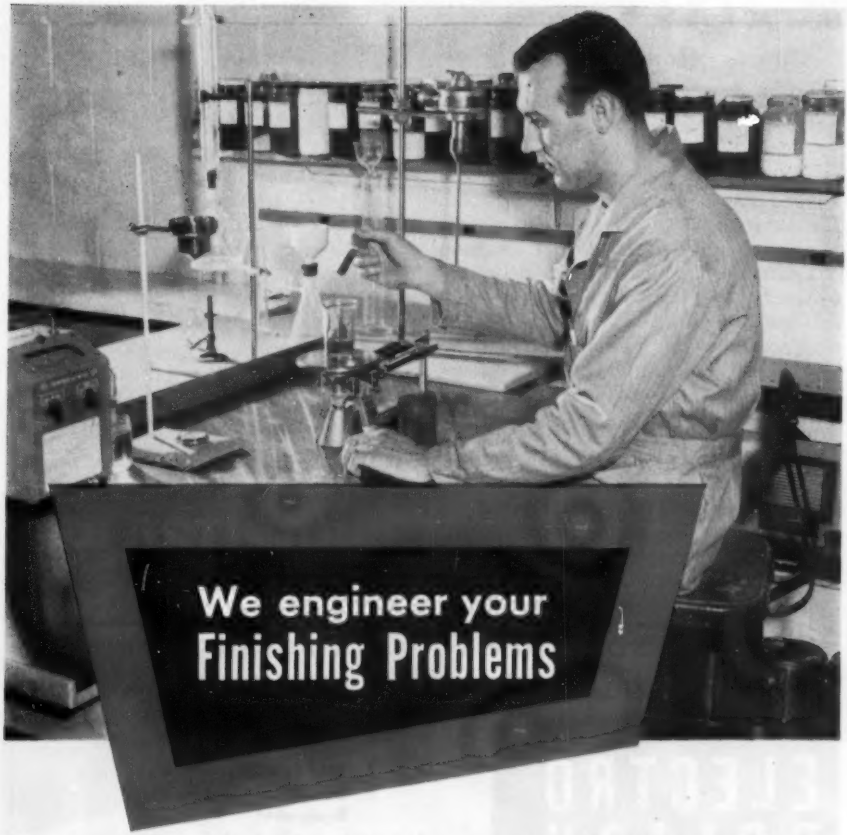

Regardless of your needs, there is a Universal coating immediately available . . . or one that can be developed especially to meet your individual requirements. Because our business is industrial finishes . . . and their correct adaptation to rigid application, appearance and protective standards.

In our well-equipped laboratory, our research engineers are constantly alert to the newest advancements in the field. They work with the most modern compounding, analyzing, and testing instruments . . . and, over the years, have developed thousands of formulas in solving specific coating problems. In fact, it is difficult to name a segment of American industry today that is not in some way benefited by the technical advances pioneered at Universal.

This vast background of practical experience is "at your service." Write or call us for further information . . . samples . . . or technical assistance. No obligation, of course.

UNIVERSAL PAINT & VARNISH INC.

BEDFORD, OHIO • Box [illegible] • Call BEdford 2-2280

We engineer your finishing problems

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bath as the metal is used in the plating process.

In plating operations, the company explains, a number of these metal anodes are dropped or "packed" into the 60-inch, 2¼-inch diameter containers to provide the plating medium.

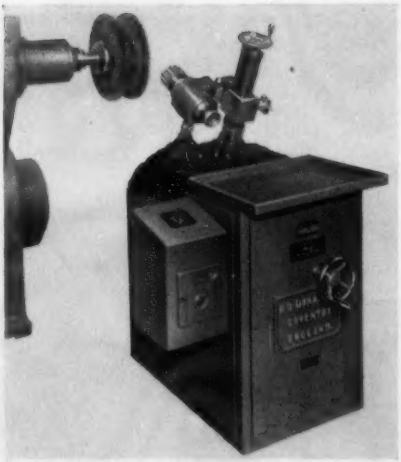
Failure of anodes to keep dropping to the bottom of the container as they are consumed bring on some of the common plating difficulties, such as poor metal deposition, bath impurities, sludging, and so on.

For more data circle **2** on Reader Service Card

★ ★ ★

Gear Deburring Machine

The Morrisflex semi-automatic gear deburring machine, Model MA-660, sold by Hammond Machinery Builders, Inc., Kalamazoo, Mich., is designed for use with a polishing lathe and



Semi-Automatic Gear-Deburring Machine

. . . SOLUTION TO A FINISHING PROBLEM

ELECTRO POLISH

production pieces faster—better with

Electro-Glo SOLUTIONS

- ✓ Polishes—Deburrs—Levels
- ✓ Saves Time—Labor Costs
- ✓ Improves Product Appearance
- ✓ Sold as a Concentrate
- ✓ Used with Standard Plating Equipment

Electro-Glo electropolishing is the modern, economical finishing method in which a fractional amount of metal is removed rather than deposited as in plating. Electro-Glo comes to you as a concentrate, and you purchase the balance of the solution locally. It is used in conventional plating equipment.

Electro-Glo does a multiple job. Deburring, leveling, and polishing take place simultaneously. Any degree of brightness is easily obtained. Electro-Glo concentrates process Copper Alloys, Stainless Steel, Carbon Steel, and less common metals and alloys.

FREE SERVICES

Engineering service available. Sample piece electropolished by the Electro-Glo method without charge. Equipment layout and cost analysis furnished. Special methods and finishes developed. Send for full details.

ELECTRO-GLO CO. • 1429 South Talman Avenue, Chicago 8, Ill.

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PLASTISOL PERFECT...

K & B OVENS!

Kirk & Blum Oven installation in the plant of a leading manufacturer of Plastisol coatings. Oven measures 12′ x 12′ x 12′ and is used for both experimental and production operations.

Kirk & Blum Ovens are popular throughout the Plastisol industry where uniform temperatures are required. The oven illustrated is operated at temperature ranges up to 600° F. with temperature variations throughout the oven of less than 5° F.

The oven is used to determine experimentally curing and baking temperatures, as well as for batch production of very large items.

Whatever your oven needs consult Kirk & Blum. Write for new "Ovens for Industry" catalog. The Kirk & Blum Mfg. Co., 3116 Forrer St., Cincinnati 9, Ohio.

KIRK & BLUM

OVENS FOR INDUSTRY

For more data circle 353 on Postpaid Card

wire brushes to deburr and radius gears, splines and serrated parts.

Rotation of the work, constant pressure against the brushes, and dwell time are all controlled by the machine. The work head, located at the top of the traversing arm, rotates at 80 r.p.m. and can be adjusted vertically and horizontally. A lead screw, operated by a hand wheel, provides lateral adjustment of the traversing arm to center the work between the brushes.

A double-acting air pressure system moves the traversing arm from the loading position to the brushes and presents the work to the brushes at the correct pressure. After correct dwell time the pre-set timer switch shuts off the machine and the air system withdraws the work from the brushes to complete the cycle.

The pre-set timer switch is the heart of the automatic cycle. Once correct dwell time is established and set on the dial switch, the operator is required only to load, unload and push the switch button for automatic processing of the work.

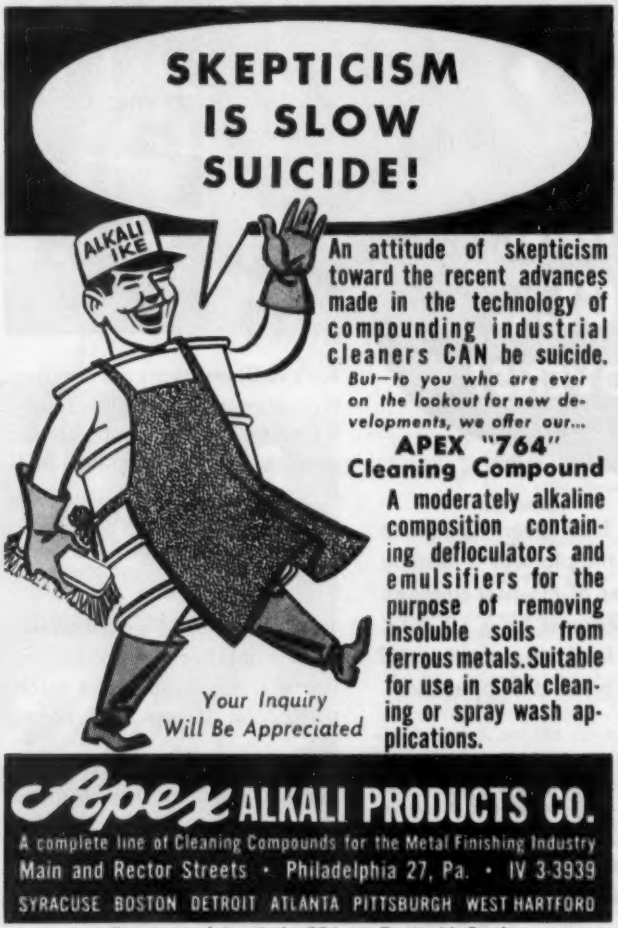
For further information write Hammond Machinery Builders, Inc., 1622 Douglas Ave., Kalamazoo, Michigan.

For more data circle 3 on Reader Service Card

★ ★ ★

Cyanide Copper

A bright cyanide copper plating process, using a combination of additives that is said to simplify control, has been introduced by Metal & Ther-


SKEPTICISM IS SLOW SUICIDE!
ALKALI IKE
An attitude of skepticism toward the recent advances made in the technology of compounding industrial cleaners CAN be suicide.
But—to you who are ever on the lookout for new developments, we offer our...
APEX "764" Cleaning Compound
A moderately alkaline composition containing defloculators and emulsifiers for the purpose of removing insoluble soils from ferrous metals. Suitable for use in soak cleaning or spray wash applications.
Your Inquiry Will Be Appreciated
Apex ALKALI PRODUCTS CO.
A complete line of Cleaning Compounds for the Metal Finishing Industry
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For more data circle 354 on Postpaid Card

IBM relies on RANSBURG NO. 2 PROCESS Electrostatic Spray Painting

to get the excellent and uniform high quality wrinkle finish on all

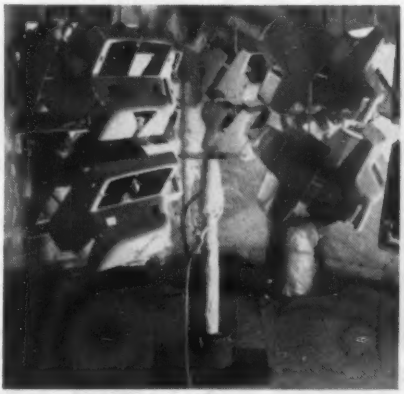
IBM ELECTRIC TYPEWRITERS

IBM's strict quality standards are easily maintained with Ransburg No. 2 Process in the painting of Electric Typewriter parts. Rejects by the former hand spray method used to run as high as 30% on some parts. Now, with automatic Electro-Spray, rejects for all reasons are only 3% to 5%.

Three Times as Many Pieces per Gallon!

Along with increased production, paint mileage is stepped up, and they get three times as many pieces per gallon as by the former hand spray method. That's because efficiency of the Ransburg No. 2 Process Reciprocating Disk puts the paint where it's supposed to go . . . on the parts.

Want to know how Ransburg Electro-Spray can improve the quality of your painted products . . . and at the same time, cut your paint and labor costs? At no obligation to you, we will make complete laboratory tests with your products to prove the advantages and cost saving benefits which can be yours with Ransburg No. 2 Process. Write or call.



Both prime and finish coats are uniformly applied to IBM Electric Typewriter cases as they rotate around the floor-mounted Ransburg No. 2 Process reciprocating disks. Automatic Electro-Spray provides three times as many pieces per gallon as by former hand spray.

Ransburg ELECTRO-COATING CORP.

RANSBURG

Indianapolis 7, Indiana

For more data circle 355 on Postpaid Card

mit Corporation. Known as M&T Bright Cyanide Copper, the process is said to give fast plating speeds, improved brightness and other advantages on all common basis metals.

The addition agents used are said to have long life and good stability.

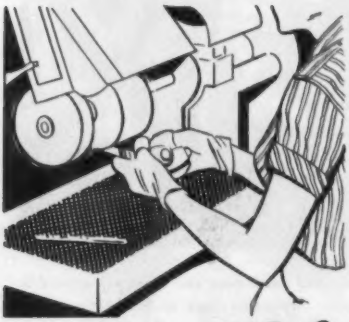
Only one chemical determination and a single Hull Cell test are required to control additives.

Uniform brightness from mirror-bright to any lesser degree may be obtained. M&T Bright Cyanide Copper produces a plate with appearance good enough for a final finish, it is stated.

The solution can be made up with either sodium or potassium salts. Permissible cathode current densities are 10 to 60 a.s.f. A wide bright plate range at high cathode efficiency assures high rates of deposition without burning on edges or dullness in recess-

M & T Bright Cyanide Copper Process: better brightness, less control, fast deposition

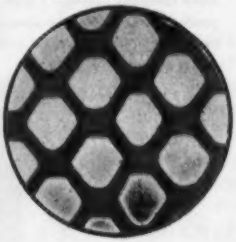
PROTECT FINE PLATED SURFACES



with **RP** *Neotex*

Neotex . . . the open pattern Neoprene rubber matting, protects highly polished finishes when used to line any surface where goods are worked on or in transit. In roll form, Neotex can be easily cut to any size or shape . . . it's rugged and long lasting, resistant to abrasives, caustics, heat, acids, oils, oxidation. Open pattern permits buffing compounds to settle. Available in a fine or coarse pattern. Write for complete information.

RP® *Neotex*



RESEARCH PRODUCTS CORPORATION

Dept. 76, Madison 10, Wis.

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ACP *Granodine*® IS THE BASE

FOR SPARKLING, DURABLE PAINT FINISHES

ACP Granodine provides an excellent base for sparkling, durable paint finishes on automotive equipment, home appliances and industrial products by chemically converting steel surfaces to a nonmetallic phosphate coating. It not only greatly increases the adhesion of the finish, but also provides extremely good corrosion resistance even when used in conjunction with a relatively thin and flexible paint film. Granodine coatings are easily and economically applied to steel surfaces by dipping, spraying or brushing.

AN AUTOMOBILE requires a durable paint finish that retains its beauty under all weather conditions—ice and snow, sun and rain. ACP Granodine phosphate coating provides an excellent base for such a finish—greatly increases the adhesion of the paint to the metal.

IN INDUSTRY, drums, materials handling equipment, machine tools and many other steel products used throughout the plant are protected by a Granodine base.

LEARN ALL ABOUT ACP GRANODINE. Bulletin 1380 describes the various types of ACP Granodine and gives information which will help you select the proper type for your particular application. Write for your copy today.

AMERICAN CHEMICAL PAINT COMPANY, Ambler 14, Pa.

DETROIT, MICH. • ST. JOSEPH, MO. • NILES, CALIF. • WINDSOR, ONT.

CHEMICALS ACP PROCESSES

New Chemical Horizons for Industry and Agriculture

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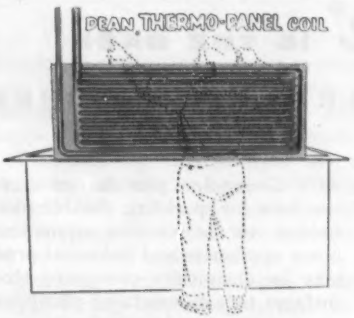

WHEN YOUR PROBLEM IS

**PHOSPHATING,
DEGREASING,
PLATING,
CLEANING,
DRYING, ETC.**

it will pay you as a modern products finishing executive to know that old-style pipe coils are obsolete. The

DEAN® THERMO-PANEL COIL

has TAKEN THE PLACE of the old-fashioned, costly variety. As indicated by the illustration above the Dean is much lighter, making it easy to install and remove for cleaning. It usually costs considerably less. Uses less space. Simpler. More efficient. More economical. No electrical hazards. Easily cleaned. Superior in every way.

MEET US AT THE CHEMICAL SHOW

in the N. Y. Coliseum, Dec. 2-6. Booth 184. And, to get acquainted first, ask for 52-page Bulletin 355 for complete technical data. Bulletin 257 gives prices and design data. If you CAN'T meet us, be SURE to ask for the bulletins. Also, read our advertisements in preceding issues of PRODUCTS FINISHING.

Backed by 20 Years of Panel Coil Manufacturing.

DEAN THERMO-PANEL COIL DIVISION
DEAN PRODUCTS, INC. 622 Franklin Ave
BROOKLYN 38, N. Y. Tel. STerling 9-5400

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ed areas, the manufacturer states.

The performance of this bright cyanide copper solution is partly attributed to a bath additive, M&T Neochel. This replacement for Rochelle Salt improves anode corrosion and minimizes rough deposits, it is stated.

M&T Neochel is also available for use with other cyanide copper processes. Two brighteners and a wetting agent comprise the other additives.

The process is applicable to automatic, still and barrel plating.

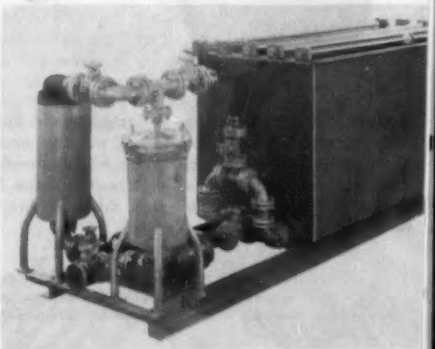
Further information can be obtained by writing to Metal & Thermit Corporation, Rahway, N. J.

For more data circle **4** on Reader Service Card

★ ★ ★

"Packaged" Plating Plant

A "packaged electroplating plant" which is said to provide volume electroplating in a compact unit, has been introduced by Sel-Rex Corporation, Nutley, N. J. Known as the Sel-Rex Industro-Pak Plater, the unit consists of a 500-gallon steel tank, coated with



The Sel-Rex Industro-Pak Plater provides volume electroplating in a compact unit. This model is in operation in the plant of a producer of printed circuits and components.

For more data circle 359 on Postpaid Card

PIONEERING QUALITY INDUSTRIAL FINISHES SINCE 1928

EFFICIENCY—

"Competency in performance—
capacity to produce
desired results."

(Webster's New International Dictionary)

CLINTON Efficiency

conforms to this definition—

TRY US AND SEE!

stomer
ervice
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No. 1
Concern

THE CLINTON COMPANY

1210 ELSTON AVE. • CHICAGO 22, ILL.

a 3/16-inch thickness of vulcanized rubber, equipped with a jet orifice manifold at the bottom which provides continuous flow of the plating solution.

Continuous or intermittent filtration is possible through the built-in filter and slurry-tank, which can be equipped with a hand-operated davit for easy removal of the filter elements.

The Sel-Rex Industro-Pak Plater is completely bussed with necessary anode and cathode bars in the amperage capacity required.

For more data circle 5 on Reader Service Card

★ ★ ★

Burnishing Compound

Oakite FM-103 is said to produce a smoother, brighter finish, prevent tarnishing during burnishing, and to rinse freely.

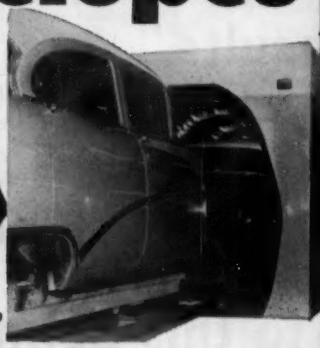
Designed for use with all types of barrel finishing media or with self - tumbling work, this compound is useful in burnishing aluminum, copper, brass, nickel-silver, gold, and mild and hardened steel.

The Oakite compound has a pH of 8.5 to 8.6. It contains no ingredients that would promote the growth of bacteria or cause dermatitis, the manufacturer states.

Oakite FM-103 is formulated to be used at one to two ounces per gallon of water. More information on this compound is available from Oakite Products, Inc., 20 Rector St., New York 6, N. Y.

For more data circle 6 on Reader Service Card

leading auto manufacturers install clepco QUARTZ OVENS



Here's Why...

CLEPCO Quartz Paint Ovens are based on the use of special CLEPCO Quartz Heaters designed to emit that part of the heat spectrum most readily absorbed by paints.

Another major auto manufacturer reports that CLEPCO Paint Ovens are lower in original cost as well as in operating costs than the conventional gas fired convection ovens previously in use.

CLEPCO'S Complete Research Facilities are at your service to determine the most efficient quartz oven for your requirements.

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THE CLEVELAND PROCESS COMPANY

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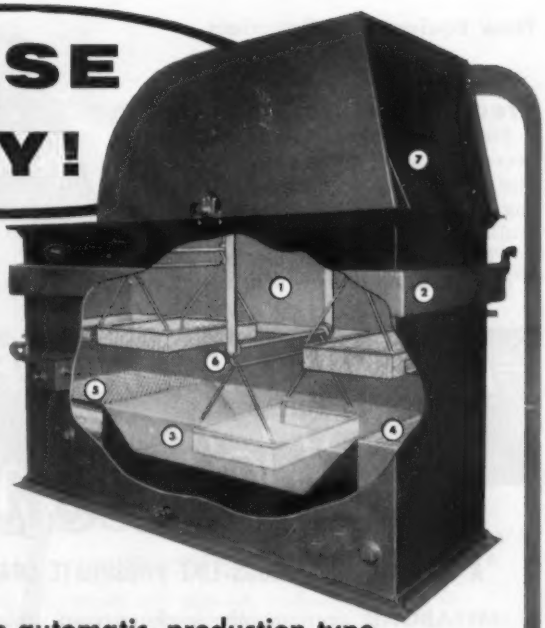

PHILLIPS
ROTOMATIC VAPOR DEGREASER
WITH LIQUID DIP

Combination of automatic time cycle, liquid solvent dip, and vapor degreasing — all in one unit. Cutaway view illustrates construction and operation: 1—Vapor degreasing area; 2—Condensing water jacket; 3—Cool rinse washes off chips and insolubles; 4—Reso-Kleen sump supplies clean solvent to rinse sump; 5—Boiling sump generates vapor; 6—Rotating reel for baskets, with timed cleaning cycle; 7—Loading and unloading point. Capacities from 1800 to 4000 pounds per hour.

NOW! This automatic, production type degreaser can be yours on purchase or lease

. . . for less than 15c per operating hour!

Automatic, high production degreasing on purchase or lease — at very low cost! It can be yours for less than 15c per operating hour!*

This degreaser handles a variety of small metal parts . . . Has adjustable control time cycle . . . Has continuous one-man operation . . . Assures complete cleaning and drying in blind holes and recesses. Available with tumblers for parts that tend to nest.

This machine is one of a complete line of Phillips degreasers. Your Phillips representative can help you determine your needs. Call him today — or write, wire or phone direct.

** Figures are for Model 60RM — Capacity 1800 pounds per hour.*

PHILLIPS MFG. CO.
3457 W. TOUHY AVE., CHICAGO 45, ILLINOIS
AMbassador 2-6020

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ENGINEERED SERVICE

PHILLIPS

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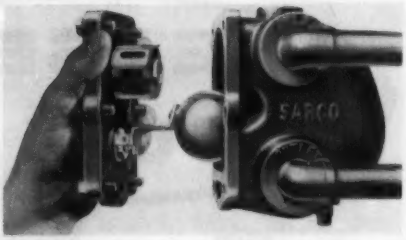
Steam Trap

Simplified construction increases the accessibility of Sarco Float-Thermostatic steam trap, type FT, facilitating inspection, maintenance, and installation.

The entire operating element of the FT trap is one unit, which can be removed without disturbing inlet and outlet connection to the semi-steel trap body, which is suitable for 125 p.s.i. steam pressure.



Sarco Steam Trap: simplified construction

Operating elements consist of stainless steel valve mechanism, copper float, and bronze thermostatic air vent.

The valve on this unit is designed to provide condensate seal and prevent loss of steam. It discharges condensate at steam temperature continuously and without shock.

A separate air vent, requiring no adjustment when pressure changes, removes air and incondensable gases, allowing no steam to escape.

The manufacturer recommends

PHOSPHATING PROGRESS with Metabond

A SMOOTH, AMORPHOUS-LIKE PHOSPHATE COATING

METABOND permanently anchors your finish to any base metal, providing greater lustre and added beauty to your finished product, thus increasing its sales appeal.

We have installed a complete pilot plant duplicating actual production conditions in the field. **YOU ARE INVITED** to bring samples of your own products or panels, if you desire, run them through our pilot plant and compare the results with *any other process or method* . . . you will be amazed at the difference.

Pick up your telephone and call us collect from any place—**MAIN 1-2864** for complete information and literature about **METABOND**, the non-sludging, amorphous zinc phosphating, the biggest step forward in phosphating in the last twenty years.

Let us work out your metal finishing problems without obligation!

INTERNATIONAL RUSTPROOF CORPORATION
1575 MERWIN AVENUE • CLEVELAND 13, OHIO
MANUFACTURERS OF RUST PREVENTATIVES & CORROSION SOLVENTS

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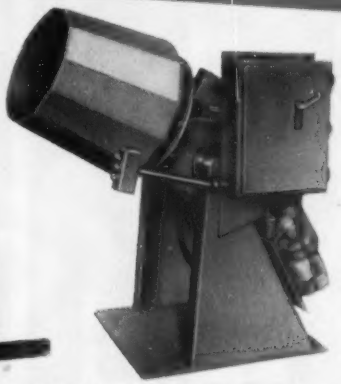

Electratilt Model With Polygonal Barrel

the new BAIRD *POLIACTION* barrel finishing machines

Hydratilt Model

designed for today's production line requirements

This new line of machines, available in two basic sizes, has been designed to meet an increasing demand for equipment of production line quality that can be economically adapted to a wide range of barrel finishing requirements.

Exceptionally "clean-limbed" in design, with all working parts and electrical equipment efficiently protected, these machines are at the same time compact, easy to keep clean, and easy to service. Modern finger-tip control and well-engineered drive and tilting mechanisms result in unusually smooth, fast and convenient operation that can mean important time and labor savings as well as close-limit control of product quality.

Equipment can be adapted readily to a wide range of barrel types, finishing methods and production needs.

Baird is one of the oldest and largest makers of barrel finishing equipment for production line service. Our long experience suggests that, when installing new equipment of this type, you first . . .

ask BAIRD about it.

With these important new features...

"Clean-limbed" for easy housekeeping • Time-saving finger-tip control • Electratilt power tilting or Hydratilt manual-hydraulic • Vari-sheave or vari-speed motor drive • Easy accessibility for adjustment or service

BAIRD about it

THE BAIRD MACHINE COMPANY • STRATFORD, CONN.

Write Department PF.

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the unit for use on unit heaters, blast coils, heat exchangers and other allied process applications.

Further data is available from Sarco Company, Inc., 635 Madison Ave., New York 22, N. Y.

For more data circle 7 on Reader Service Card

★ ★ ★

Dust Collector

Torit Manufacturing Co., 296 Walnut St., St. Paul 2, Minn., has recently introduced Model 219-FB-55 Dust Collector, which uses standard 55-gallon drums for dust storage.

This collector is intended for use in operations that create large volumes of dust, such as buffing.

The Torit unit uses centrifugal force to precipitate all but the finest of particles into the drum. An auto-

Torit Dust Collector: fits 55-gallon drums

ANY OVEN TEMPERATURE
at the turn of a dial
with
driQuik
INFRA-RED INTERLOCKING OVEN SECTIONS
OVENS ANY SIZE OR SHAPE
NO BULBS OR SOCKETS TO BURN OUT. Gives even field of heating energy, free from hot or cold spots.
Whether your job is low temperature metal prep or fast paint baking, your driQuik oven or heating panel or any part of it can be dialed to any temperature from 0% to 100% of rated power. One piece of equipment can do many jobs efficiently without additional installation cost.
driQuik DIVISION
DRY CLIME LAMP CORP.
GREENSBURG, INDIANA

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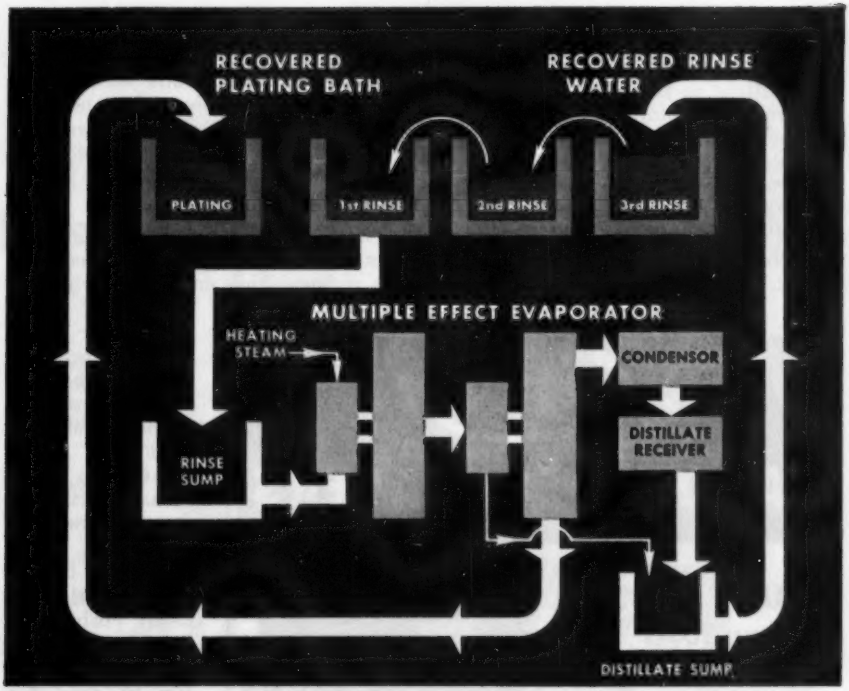

New recovery system cuts plating costs!

Industrial's Plating Bath Recovery Equipment provides complete recovery of acid and metal drag out losses, using a rapid evaporation process engineered to suit your operation. The savings can be fantastic . . . the system not only returns fresh plating solution to the bath and pure water to rinse tanks . . . it eliminates the high cost and trouble of neutralizing corrosive rinse water for disposal. In a typical case the replacement of solution and destruction of rinse water cost $12.46 per hour. **The Industrial System recovers the bath at a cost of $2.13 per hour.**

Unbelievable? . . . No sir! . . . these are systems designed by a company with a 30-year reputation for building the best in plating equipment. Let us prove it—our staff will be glad to make an analysis of your process, recommend equipment and estimate costs and savings.

Send for complete data

INDUSTRIAL

FILTER & PUMP MFG. CO.

5904 Ogden Ave., Chicago 50, Ill.

Please send me reprints of articles and literature on Industrial's Plating Waste Recovery Systems.

NAME_____

TITLE_____

COMPANY_____

ADDRESS_____

CITY_____ STATE_____

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matic fitting on the drum's cover seals the drum and eliminates the need for clamps. Drums can be changed in 30 seconds.

Three after-filter bags on this model trap the remaining particles of dust and allow recirculation of the air back into the plant, thus air is conserved.

The unit is powered by a 5-h.p., 3,450-r.p.m. motor. The collector handles 2,000 c.f.m. of air per minute through its 8-inch inlet at a static pressure of 2.8 inches of water. Air speed: more than one mile per min.

For more data circle 8 on Reader Service Card

★ ★ ★

Burnishing Compound

The Esbec Barrel Finishing Corporation has announced Esbec No. 203, a burnishing compound which is especially designed for high lustre burnishing in aluminum oxide chips and in molded shapes.

It is a fine, non-dusting, non-abrasive, concentrated powdered compound.

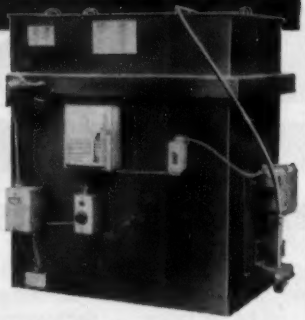
Its long-lasting head provides unusual cushion, it is stated.

Esbec No. 203 can be used for "cut and color" operations where deburring and burnishing is done in one operation in aluminum oxide media, thereby eliminating separate cut, rinse and burnishing cycles.

Technical data sheets and free test samples are available on request from The Esbec Barrel Finishing Corp., 192 Beech St., Byram, Conn.

For more data circle 9 on Reader Service Card

Aircon
VAPOR DEGREASERS



ANY SIZE...
Standard
or
Custom

Aircon Vapor Degreasing Systems are available in a complete line, ranging in size, from the smaller bench and barrel-type units to the larger, permanent, high capacity degreasers.

MODEL "75"

Aircon Degreasers are:

Gas, Electric or Steam Heated • Complete Units with all safety equipment

NO EXTRAS TO BUY

Write today for full information

WE ARE DESIGNERS AND ENGINEERS OF SPECIAL DEGREASING EQUIPMENT. CONSULT US ON YOUR DEGREASING PROBLEMS.

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Representation in Major Cities

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Write Dep't. C for Samples

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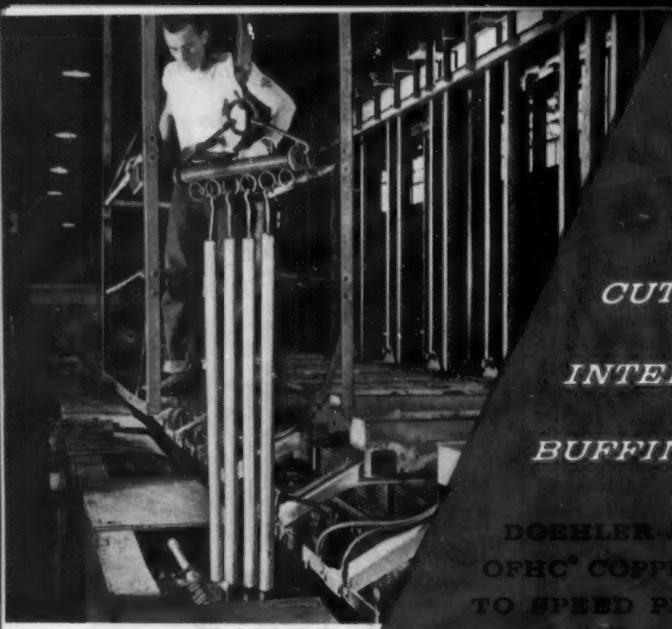


PLATING PROBLEMS
IN INDUSTRY—NO. 2

CUTTING

INTERMEDIATE

BUFFING

DOEHLER-JARVIS USES OFHC® COPPER ANODES TO SPEED PLATING CYCLE

In plating automotive parts, smooth copper plating on the basic metal is essential. That's why Doehler-Jarvis Division of National Lead Company, a leading manufacturer of automotive parts and accessories, uses OFHC Brand Copper Anodes in electroplating.

Doehler-Jarvis plating men found that in using conventional copper anodes many parts had to be scrapped for plating roughness that even buffing couldn't smooth. But with OFHC Copper Anodes, consistently smoother finishes were obtained, reducing intermediate buffing and cutting reject rate considerably.

OFHC Copper Anodes give smoother, denser finishes because OFHC Copper is free of anode impurities. OFHC Copper is 99.99+% pure, contains no oxides, no deoxidants. This purity effectively decreases the amount of insoluble particles introduced into the plating bath, a major cause of roughness.

To find out how the extreme purity of OFHC Copper Anodes can benefit your own electroplating operation, contact your distributor or our nearest office directly.

Typical of the continuing effort Doehler-Jarvis makes to improve product quality and maintain its position as a leading automotive parts manufacturer is the use of high-purity OFHC Copper Anodes for smoother copper plating. As a result, many cars on the road today shine with Doehler-Jarvis plating.

THE AMERICAN METAL CO., LTD.
61 Broadway, New York 6, N. Y.

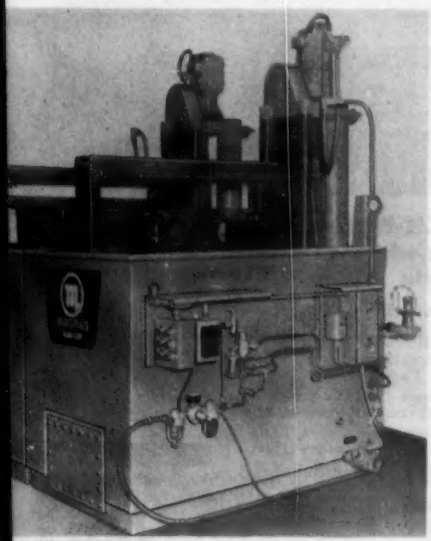
BOSTON — CHICAGO — DETROIT — LOS ANGELES

Cleaning Machine

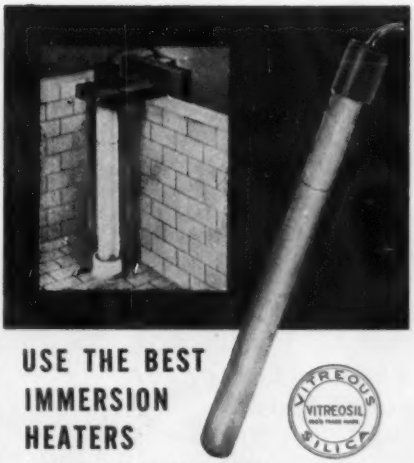
Manufacturer: Equipment Div., Magnus Chemical Co., Inc., 208 South Ave., Garwood, N. J.

Description: Two-stage batch-type cleaning machine.

Operation: Work is placed on platform of cleaning machine, and is secured to the platform by an adjustable hold-down device. Pressing a button causes the platform and work to lower into the cleaning solution. Work moves up and down rapidly and revolves at the same time while in the cleaning solution. It is rinsed in another similar tank alongside the cleaning tank. Upon completion of pre-set cycle, work automatically rises from the tank, makes a few more revolutions to drain the work, and stops, ready for unloading. Agitation of the work is adjustable: a 3 to 5-inch stroke at 160 motions per minute, or a 6 to 10-inch stroke at 60 up-



Magnus Gyro-Vertical Aja-Lif Cleaning Machine: shakes and spins parts to remove dirt



USE THE BEST IMMERSION HEATERS

VITREOUS SILICA — VITREOSIL

U.S. Patent No. 2,654,820

Compact, safe and efficient, VITREOSIL® electric immersion heaters offer you your most dependable units. Designed for acid pickling and electroplating solutions and other acid baths, VITREOSIL heaters give greater heat transfer per unit area and greater resistance to chemical attack.

VITREOSIL immersion heaters are made of pure fused silica and have special corrosion-resistant caps, built-in ground wires for additional protection and easily visible minimum immersion depth markings.

VITREOSIL immersion heaters will serve you best. Write for bulletin and prices.

THERMAL AMERICAN FUSED QUARTZ CO., INC.
18-20 Salem Street, Dover, New Jersey

Please send illustrated bulletin or information on_____

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Company_____

Name_____ Title_____

Street_____

City_____ Zone____ State_____

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For more data circle 368 on Postpaid Card

and-down motions per minute, or a 25- to 30-inch stroke that raises the work in and out of the solution on each stroke.

Applications: Removing oils, chips, shop dirts and other soils from cylinder heads and other parts that have recesses and cavities.

For more data circle **10** on Reader Service Card

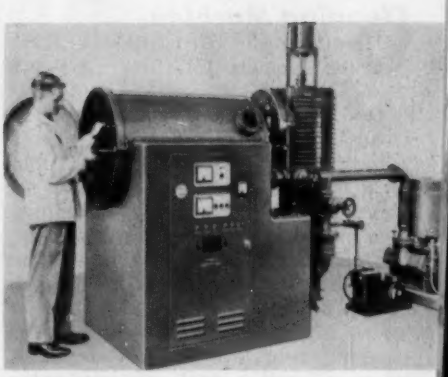
★ ★ ★

Vacuum Coater for Small Finisher

Manufacturer: Consolidated Electrodynamics Corporation, Rochester Div., 1775 Mt. Read Blvd., Rochester 3, N. Y. Data sheet No. 2-28 describes this unit.

Construction: Work chamber of CEC's Model LCI-30 is a 30- by 45-inch horizontal steel tank with a hinged door at one end. Pumping system consists of 14-inch oil-diffusion pump, 110-c.f.m. roughing pump, and a 3.5-c.f.m. holding pump. Pumps are interlocked to prevent burning of diffusion-pump oil. Unit has roughing, backing,

To page 116→



CEC's Model LCI-30 Vacuum Coating Machine

Bond® TACK CLOTH

PACKED IN ROLLS OR IN BULK
JUST THE WAY YOU WANT IT!

Stays Soft and Tacky — A SPECK-FREE FINISH EVERY TIME — Now available in white or gold — in Four Different Types of Cloth.

There's a big difference in TACK-CLOTHS—that's why BOND processes four different meshes of cloth with several types of formulations to give you the cloth that best "fits" your special needs. You can get BOND TACK CLOTH packed just the way that suits you best, too—in 150 yard Rolls of 36" wide cloth or in handy Cartons.

No matter which way you buy it, you can be sure that every square inch will stay SOFT and TACKY until the very last bit is used up.

All BOND TACK CLOTH is Spontaneous Combustion Proof, Lint-Free and Wax-Free. Gives a sparkling speck-free finish every time. Clean and Sanitary. No waste. Choice of Standard, Extra Tacky or Less Tacky.

TRY THEM AND COMPARE RESULTS. Samples gladly sent upon request.
A WARRANTY OF SATISFACTION IN EVERY CARTON

IN ROLLS
Cut off any size piece as needed.

IN BULK
Size is 18" x 56"—folded to 4½" x 18" or 9" x 18" for ease of handling. Cut and folded—ready to use. Also Individually Packed in Glassine Envelopes —144 to the carton—

Bond® CHEMICAL PRODUCTS CO. 2639 N. CLYBOURN AVE. CHICAGO 14, ILLINOIS
"The Tacky Wiper Specialist"
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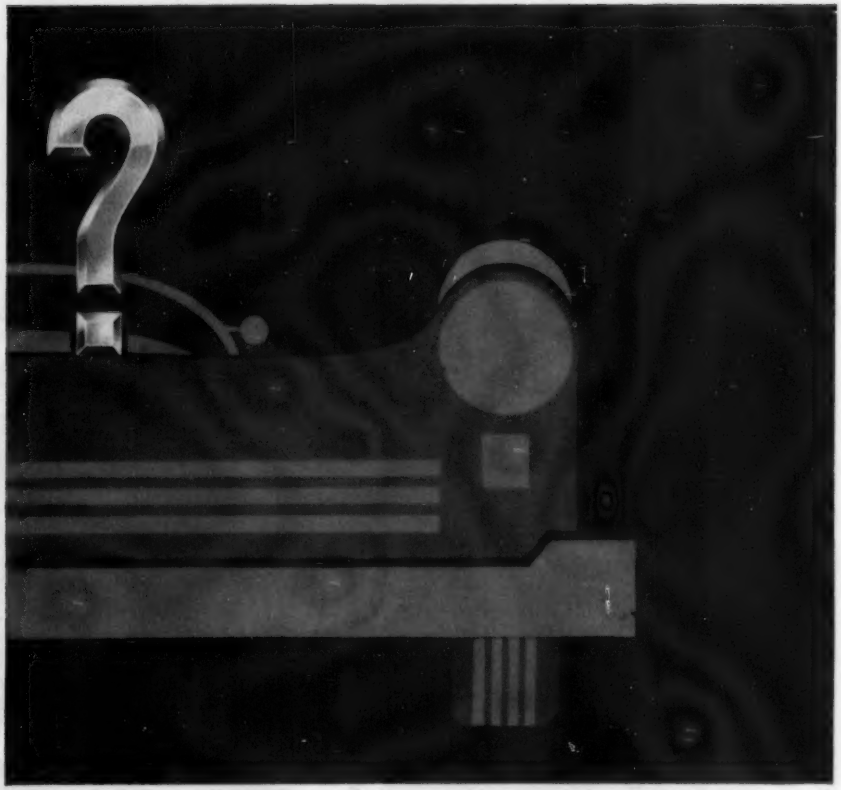

Grill Diamond's service department on chrome plating

Call in DIAMOND technical specialists when you run into a chrome-plating problem. These experienced men work only on customers' questions. They deliver complete, profit-making answers. Their service is free.

In making chromic acid, DIAMOND controls quality through every step. DIAMOND experience begins with importing the chrome ore and making the soda ash. It includes production and delivery . . . even standing by your side, if you wish, to help you consistently get top-quality plating results at low cost.

DIAMOND facilities—two chromic acid plants and nine warehouses and sales offices across the country—assure you uninterrupted service from a dependable source of supply. DIAMOND ALKALI COMPANY, 300 Union Commerce Building, Cleveland 14, Ohio.

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And other finishes

Products Finishing DIRECTORY'S *exclusive* Distributor Listings supply the last and very important link in the sales chain. They tell readers "Where-to-Buy." Both classified and display advertising is available to distributors at regular rates.

Products Finishing DIRECTORY is a 13th edition in addition to regular monthly issues. The DIRECTORY can be used individually or in combination with monthly issues to earn attractive four, seven or thirteen-time rates.

Products Finishing DIRECTORY closes Feb. 15th for publication, March, 1958

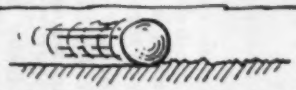
products finishing directory

431 Main Street Cincinnati 2, Ohio

Barrel Finishing Notes:
by the abbot

NOTHING ***BURNISHES*** LIKE STEEL BALLS AND SHAPES

"For centuries craftsmen have smoothed metal surfaces with hand burnishers of hardened steel. Today, we mass-produce fine burnishes with Abbott *deep hardened* steel Burnishing Materials. Used with the Abbott 'Vertical' Barrel, they're unsurpassed for giving stampings, castings and other parts a *truly burnished* finish."



"Abbott Burnishing Balls and Shapes *duplicate* the action of hand burnishing tools . . . they roll-down minute surface imperfections and reduce porosity."

Write for the Abbott burnishing booklet!

THE ABBOTT BALL COMPANY
1064 New Britain Avenue, Hartford, Connecticut

ABBOTT

For more data circle 373 on Postpaid Card

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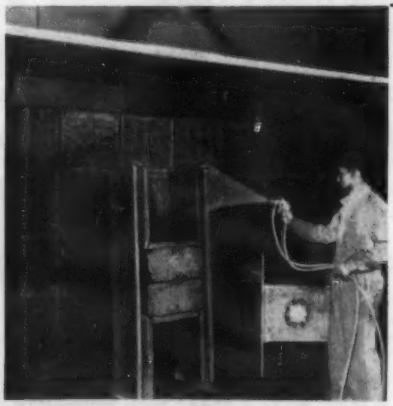

Photo Courtesy Globe Hoist Co., Philadelphia, Pa.

RP PAINT ARRESTORS REDUCE MAINTENANCE, FLOOR - SPACE REQUIREMENTS & DOWN-TIME

Efficiency and economy were combined to improve the paint spray operation in this booth illustrated. RP Paint Arrestor Pads trap overspray, are easily, inexpensively replaceable and adaptable to almost every type operation. If you spray paint—check the RP Paint Arrestor way to savings and efficiency.

RP . . . PRODUCTS OF RESEARCH

RESEARCH PRODUCTS CORPORATION
Dept. 38, Madison 10, Wis.

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for more than **15,000** *customers in*
50 *varied industries throughout the world!*

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HARSHAW sells chemicals—thousands of them—for these and many other industries throughout the world

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Optical
Paint, Varnish and Lacquer
Paper
Petroleum
Pharmaceutical
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Porcelain Enamel
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Welding Electrodes
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Organic and Inorganic Dry Colors and Dispersions
Driers and Metal Soaps
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Fluorides
Glycerine
Preformed Catalysts, Catalytic Chemicals
Synthetic Optical Crystals
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Fungicides
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1945 EAST 97th STREET • CLEVELAND 6, OHIO
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FREE! This 16-page booklet lists the many chemicals available from Harshaw.

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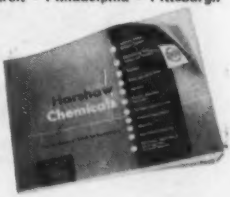


For more data circle 375 on Postpaid Card

and air-inlet valves, and a water-cooled high-vacuum valve that minimizes backstreaming of pump-oil vapor. Dimensions: 9 by 6 by 13 feet deep.

Features: Production rate of five to seven cycles per hour. 400 to 600 pieces 1½ inches in diameter can be metalized in one cycle. Pump-down time with a clean, dry system is five minutes to 0.5 micron Hg, with ultimate pressure of 3×10^{-5} Hg. Pressures in the work chamber and forepressure lines are measured by discharge and Pirani gages.

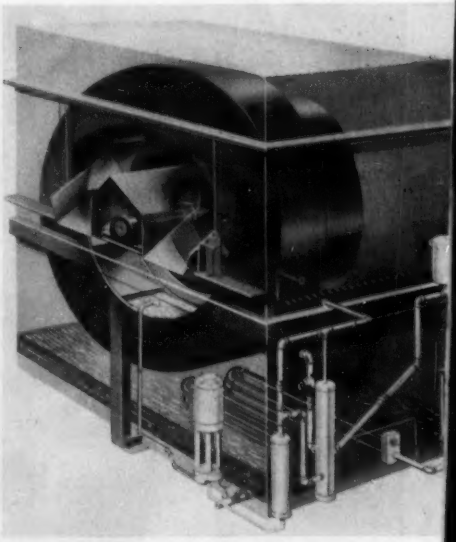
Applications: Small and medium-sized finishing shops or departments.

For more data circle 11 on Reader Service Card

★ ★ ★

Rotary Drum Degreaser

Detrex Chemical Industries, Inc., Box 501-A, Detroit 32, Mich., has in-



Detrex Model 1DD750 Rotary Drum Degreaser

Another fine product made finer . . .
with the PARAMOUNT "Finishing Touch"
Colonial Brass Company has been a leading producer of bronze and aluminum memorial plaques, nameplates, sundials and other cast metal specialties since 1847. "We found out long ago," says Colonial's Mr. J. A. Davis, "that only Paramount felt wheels can produce a fine uniform finish on lettering, designs and other highlights without rounding off sharp edges. And Paramount Wheels are available in such a wide range of densities we can select a type exactly right for each metal we work with."
Your products, too, deserve the fine finish only Paramount Bobs and Wheels can produce. Discover how easy and economical it is to get the finest finishes — call your Paramount supply house today.
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WATER CONDITIONING EQUIPA
THE PERMUTIT COMPANY, NEW
DE LAVAL
Paramount
Felt Wheels, Bobs, Sheet Felt
Bacon Felt Co. 447 West Water St., Taunton, Mass.

For more data circle 376 on Postpaid Card

ILLINOIS WATER TREATMENT CO.
840 CEDAR ST., ROCKFORD, ILL.
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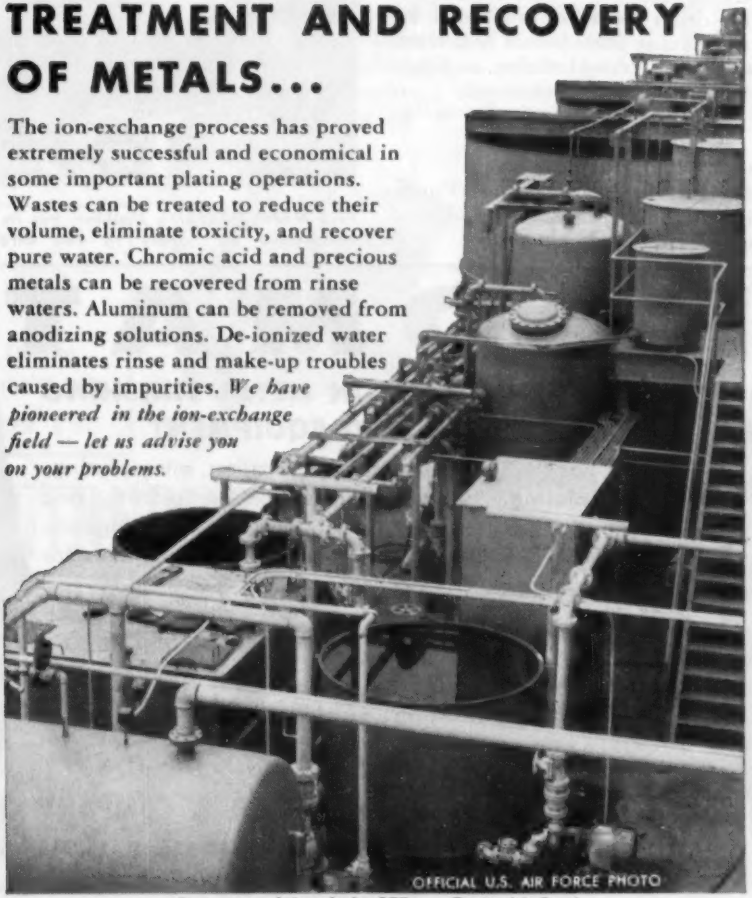
ILLCO-WAY

ionXchange

FOR WASTE TREATMENT AND RECOVERY OF METALS...

The ion-exchange process has proved extremely successful and economical in some important plating operations. Wastes can be treated to reduce their volume, eliminate toxicity, and recover pure water. Chromic acid and precious metals can be recovered from rinse waters. Aluminum can be removed from anodizing solutions. De-ionized water eliminates rinse and make-up troubles caused by impurities. *We have pioneered in the ion-exchange field — let us advise you on your problems.*



OFFICIAL U.S. AIR FORCE PHOTO

For more data circle 377 on Postpaid Card

troduced a rotary drum degreaser that combines solvent degreasing with automated work handling.

The Detrex degreaser, Model 1DD-750, is designed to handle small parts, such as nuts, bolts, fasteners, stampings and screw-machine parts.

Parts are subjected to vapor and immersion cleaning and vapor rinse. They are carried through the machines by a screw-type drum, which gently tumbles the parts as they are being processed. Parts are discharged dry through a chute.

This drum degreaser is suitable for use in cleaning parts before heat treatment, plating, phosphatizing, or bright dipping, or as a final cleanup.

For more data circle 12 on Reader Service Card

★ ★ ★

Flocking Machine

Manufacturer: Progressive Equipment Co., 8629 Mackinaw at Grand River, Detroit 4, Michigan.

Peco Model 7 Flocking Machine: has its own compressed air supply in the cabinet

PROMAT

THE GREATEST NAME IN METAL FINISHING CHEMICALS AND EQUIPMENT

PROMAT has the finest in metal preparation, alloy plating, cadmium plating, chromate finishes, copper plating, zinc plating and miscellaneous purifiers and anti-foam agents. PROMAT also handles a complete line of equipment for the plating industry.

For technical bulletins on any of PROMAT'S great line of protective materials or for a free copy of PROMAT'S monthly magazine "PROGRESS" write to —

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REMEMBER: PROMAT MEANS PROTECTIVE MATERIALS

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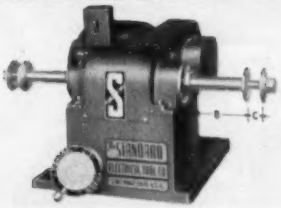
FOR FINISHING TO A "STANDARD"



BVB 1 HP
Bench Model

Standard Buffers and Polishers are superbly engineered for top production. "Speedial" control lets you choose speed between 1500 and 3000 RPM *instantly*. Buffing, polishing, coloring to a uniform finish by maintenance of constant peripheral speed.

Booth 1641
METAL SHOW
Chicago Amphitheatre
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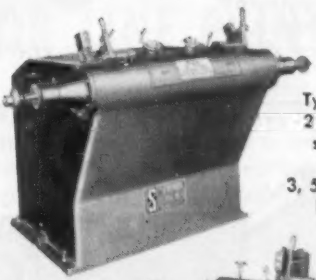
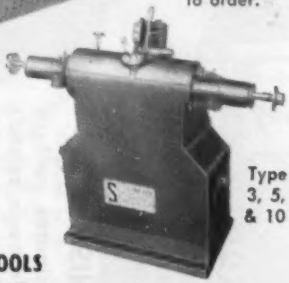


Type R2V with 2 independent spindles and motors.
3, 5, 7½ & 10 HP.
Larger sizes to order.



Type RV
3, 5, 7½ & 10 HP.

the STANDARD electrical tool co.

BUFFERS - POLISHERS and MACHINE TOOLS
2518 RIVER ROAD • CINCINNATI 4, OHIO

WRITE FOR CATALOGUE

INFINITELY VARIABLE SPEED, PROPER SPEED, MOTOR DRIVEN

BUFFERS — POLISHERS

For more data circle 379 on Postpaid Card

Description: Peco Model 7 Flocking Machine is compact unit, has self-contained air supply.

Construction: Roller chain drive with totally enclosed motor; nylon spiral-feed brush; flexible steel baffle for volume control; separate fan-motor assembly. Mounted on casters. Supply hopper is designed so that it can be unloaded quickly.

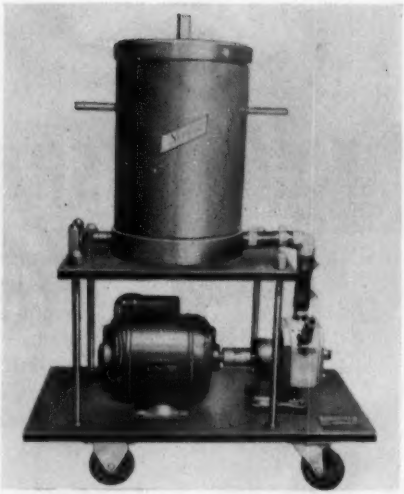
Applications: Commercial, display, and industrial flock coating.

For more data circle **13** on Reader Service Card

★ ★ ★

Plastic Filter Pumps

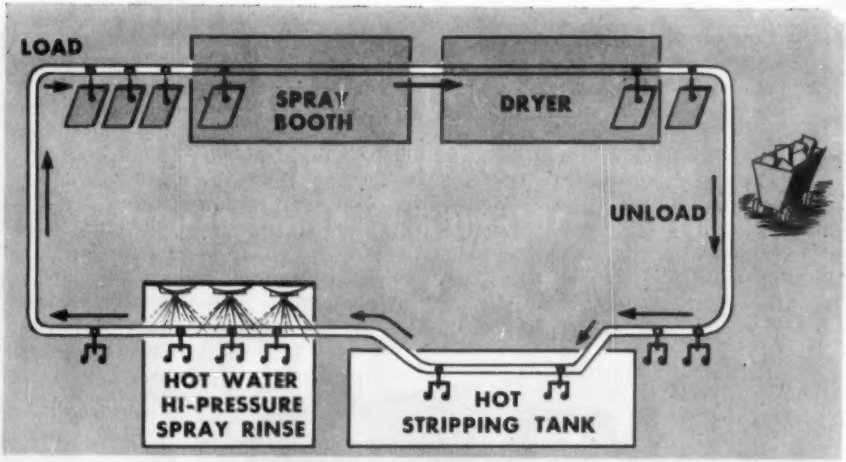
Sethco Manufacturing Company, 2292 Babylon Turnpike, Merrick, L. I., N. Y., has announced a new design



Sethco Model VPHI-30DT Plastic Filter Pump

STOP COSTLY HANDWORK
Easy LICKS TOUGH JOBS WITH DUAL-ACTION
HEAVY GRINDING, SANDING, DEBURRING TO MICRO-FINISHING
Easy
Model DA Air.
COLD FINISHING
Dual Action eliminates surface heat. Stops heat damage, speeds the job and cuts abrasive costs to 75%.
Tops for white metal slick-up. Removes swirls, smooths solder. Sanding surfacer, putty, and spotting rejects.
DUAL-ACTION OR STRAIGHT LINE. AN Easy FOR EVERY JOB.
Model DF Electric.
Model JR Air.
Ask your Jobber for Demo. or write
DETROIT SURFACING MACHINE CO.

For more data circle 380 on Postpaid Card



CONVEYOR LINE PAINT STRIPPING

With more and more plants incorporating the stripping of hooks, shields, trucks and other paint conveyor-line apparatus into the production line itself, there is an ever increasing need for an automatic stripping method which will work quickly, thoroughly and economically to prevent the build-up of over-spray.

And the answer to that need . . ? It's here, in this . . .

MAGNUS METHOD—Research by Magnus technicians has proven that the simple addition of a quantity of MAGNUS 751 to any of the Magnus Heavy-duty Alkaline Strippers provides unequalled speed and effectiveness. Even the difficult-to-remove types of paints and primers are effectively and thoroughly stripped. And, this method is highly economical, since the MAGNUS #751, in addition to increasing the effectiveness of the strippers, also extends the already-long life of the solution.

For full information on this modern production-line method, including detailed recommendations and methods for determining correct proportions, write today to Magnus, 208 South Avenue, Garwood, New Jersey.

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Industrial Cleaning Division

MAGNUS CHEMICAL CO., INC.

—a world-wide organization specializing in cleaning and protection of all surfaces.

For more data circle 381 on Postpaid Card

and several additions to its line of plastic filter pumps, which are designed to filter corrosive solutions with no metal contact.

These filter pumps have a plastic pump and a plastic filter chamber mounted on an impregnated linen phenolic panel and coupled to a totally enclosed ball bearing motor.

All models are portable. Four sizes are now available in this series, with capacities of 50 to 300 g.p.h.

A wide range of materials of construction is available for the pump body, pump impeller, filter assembly, and filter tubes, so that almost any corrosive can be successfuly filtered.

Optional equipment includes a reversing switch, to back wash the filter chamber without disassembly, and a by-pass, to by-pass the filter element when straight pumping is desired.

For more data circle 14 on Reader Service Card

★ ★ ★

Black Finish

A green-colored solution introduced recently by Wagner Brothers Inc., Detroit, is reported to produce black finishes on either plain zinc die cast or zinc-plated parts in about 10 to 120 seconds of immersion time, depending on temperature of the bath.

According to the company, the development produces finishes with no increase in dimensional tolerance on the treated parts. It is suitable for camera or instrument components

THE *One-coat*
HEAVY DUTY PROTECTIVE COATING

For Structural Steel • Tanks • Stacks
Walls and Floors • Tank Truck Exteriors

Outstanding resistance to chemicals, acids, alkalies and solvents . . . withstands extreme weathering . . . can be applied by brush or roller coating . . . dries to touch in six hours.

SERIES E-900 COATINGS are high solids modified epoxy formulations which result in superior toughness, resistance to abrasion and excellent adhesion to any clean surface.

Regularly available in . . . clear . . . white . . . gray . . . and sea-foam green. Because of high solid content, 95% of the applied thickness is converted to a protective film.

Write today for
Technical Bulletin E-900

7300-CC

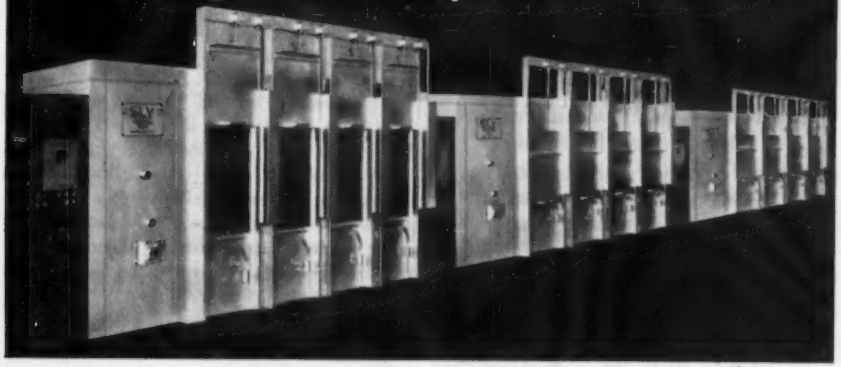
THE CEILCOTE COMPANY INC.

4848 Ridge Road • Cleveland 9, Ohio

For more data circle 382 on Postpaid Card

SLY Industrial Ovens

Give Better Electrical Coatings Through Close Temperature Control



Remarkably compact, each oven measures 10'-6" wide by 6'-0" high by 3'-8" deep—14' overall.

A leading manufacturer of transformers needed ovens to cure the products' plastic coating. Close temperature control was required; floor space was limited.

The problem was solved by installing Sly batch type ovens — three individual ovens with four compartments per unit, in line.

Each oven has its own direct gas-fired air heater and is complete with its own temperature and safety control system.

The ovens are equipped with overhead lift doors — 2' wide by 3' high — for manual loading and unloading. The transformers, on pallets, enter on gravity type roller conveyors. When a door is opened, an automatic damper closes off the heat supply for operator comfort. When door is closed, the damper is automatically opened to allow heated air to pass over the work.

Shop-assembled, the ovens required a minimum of labor to install.

Close temperature control with economies in efficient use of available space plus savings in installation and operation were achieved in this case — typical of Sly. Ask for Bulletin 200 and let's discuss your problem.

Designers and Manufacturers of: Dust Control Systems, Industrial Ovens, Blast Cleaning Equipment, Tumbling Mills.

SINCE 1879

THE W. W. SLY MANUFACTURING CO.

4784 TRAIN AVENUE • CLEVELAND 1, OHIO

OFFICES IN PRINCIPAL CITIES

For more data circle 383 on Postpaid Card

where non-reflecting surfaces are required. It also is applicable for color identification purposes, such as preventing a mixup of small parts on a production line where a number of small similar items are being handled.

The liquid, which Wagner calls Nero-Zinc, is applied to parts to be treated in form of a bath, in which one part of the solution is added to three parts water, heated to a temperature between 110 to 150 deg. F.

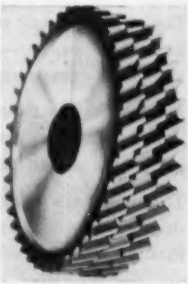
In the case of zinc-plated parts, they are placed in the bath following the second cold water rinse after plating. A tank of stainless steel, ceramic or one of mild steel that is lined is adequate for the bath.

For more data circle **15** on Reader Service Card

★ ★ ★

Contact Wheel

A rubber contact wheel introduced by Chicago Rubber Co., Inc., Waukegan, Illinois, is said to be outstanding for its ability to shape itself to the contours of the object that is being ground. Because of its deep serrations the wheel will conform to such shapes as boat propellors, intricate automobile hardware, and many household utensils.



R-58 Contact Wheel

Since the belt is more flexible when riding on the deep grooves, it can shake out dull abrasive and prevent glazing that shortens belt life, the manufacturer states.

The R-58 contact wheels—all one

have your silk screens made by **NAZ-DAR!**

Silk, Nylon or Metal Cloth

- Prompt Delivery anywhere in U. S.
- Absolutely TAUT screens for perfect registry to last impression of run.
- Perfect reproduction of your black and white drawing.
- Prepared by experienced technicians.

PERFECT FOR

TV SETS NAME PLATES TOYS DIALS
ASH TRAYS CHASSIS PRINTED CIRCUITRY

Use NAZ-DAR Weatherproof Silk Screen Enamel

Uniformly high opacity

Write today for screen and ink information, Dept. P-6.

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screen plates • squeegees • films

For more data circle 384 on Postpaid Card

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Supplied in straight or crimped brass, steel, nickel silver or stainless steel wire in sizes .0025 to .006 and in bristle, fibre or Nylon. Special sizes and shapes to order.

Write (Dep't. P) on your letterhead for catalog and price list

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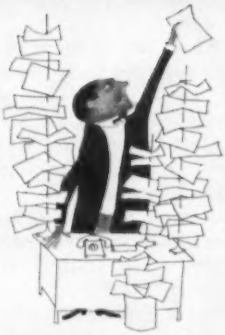
For more data circle 385 on Postpaid Card

HOW TO SAVE MONEY

Relieve warehouse overload.

Combined orders can cut costs.



Reduce paperwork—one shipment, one order, one invoice.

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Products of the nation's leading producers.

***Products of the* SOLVENTS *and* CHEMICALS GROUP**

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FORT WAYNE, ANthony 0213
GRAND RAPIDS, CHerry 5-9111
HOUSTON, ORchard 2-6683
INDIANAPOLIS, MElrose 8-1361
KANSAS CITY, CHestnut 1-3223
LOUISVILLE, EMerson 8-5828
MILWAUKEE, GReenfield 6-2630
NEW ORLEANS, VErnon 3-4666
ST. LOUIS, GArfield 1-3495
TOLEDO, JOrdon 3771
WINDSOR, CLearwater 2-0933

For more data circle 386 on Postpaid Card

inch in width—are available in various hardnesses or durometers. The wheels can be combined for any width or hardness combination that may be necessary.

When two or more of the wheels are used together they leave no pattern on the work: the lands overlap. When one edge starts to wear, the wheels can continue to be used by reversing them on the shaft.

Each wheel consists of a pair of steel discs with a deeply serrated tire. The flange hub is also rubber and will grip a shaft securely even if the shaft is worn.

For complete details write the Chicago Rubber Company, Inc., 651 Market St., Waukegan, Illinois.

For more data circle **16** on Reader Service Card

★ ★ ★

Plastisol-Lined Containers

A line of corrosion-resistant drums and buckets, coated with Miccrosol vinyl plastisol, has been announced by the Coating Division of Michigan Chrome and Chemical Company, 275 Iron St., Detroit 14, Mich.

Michigan Chrome's Plastisol-Lined Containers

Coated inside and out with corrosion-resistant Miccrosol, these containers are useful for storing acids, caus-

JELCO

• BRASS ADDITIVE

—Also available JELCO COP-BRITE and BARREL NICKEL Brightener

- Increases efficiency and throwing power
- Produces brighter and faster plating
- Allows use of higher current density
- Eliminates cyanide and ammonia fumes
- Retards anode polarization

Non-Critical
Boosts Production
Cuts Rejects

Can be used in standard and high speed formulations . . . still and barrel plating

• Write for complete information

A Proven Process . . . Used successfully by both manufacturers and job platers

For the "Solution to your Plating Problems". . . Come to

JELCO FINISHING EQUIPMENT CORP.

153 EAST 26th STREET • NEW YORK 10, N. Y.

Telephone: LExington 2-3055

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YOU GET A BETTER FINISH IN LESS TIME AT LOWER COST with SPEE-FLO HOT SPRAY SYSTEMS

(Photo courtesy General Electric Company)

Whether you are painting large units such as the transformer tanks shown above or any of a variety of smaller industrial products, you can be sure of getting the same advantages with the Spee-Flo hot spray method of finishing. Controlled hot spray means low, uniform viscosity—regardless of weather. This results in reduced overspray, faster application, and up to ⅓ savings in material. Other advantages include better coverage, faster dry, and elimination of runs and sags. If your job requires better finishing at the lowest possible cost, you'll want all the facts on Spee-Flo hot spray systems.

WRITE for literature and free booklet: "Why Hot Spray?"

SPEE-FLO
720 POLK AVE. HOUSTON, TEXAS

7464

For more data circle 388 on Postpaid Card

tics, plating solutions, and all types of corrosives. Miccrosol is bonded to the steel and resists physical damage.

Drums are available in 55- and 30-gallon sizes. Buckets are 5 gallons.

For more data circle 17 on Reader Service Card

★ ★ ★

Steam Cleaning Machine

A heavy-duty steam cleaning machine has been announced by Circo Equipment Company, 124 Central Ave., Clark, N. J.

The Circo unit can be operated by one man. At the snap of a switch a spark ignites the burner and puts the machine into action. From this point on, automatic controls operate the unit, eliminating adjustments.

The Circo machine is ready for action almost instantly. Operating pressure is generated in 90 seconds.

Circo Model 120 Steam Cleaning Machine

The system is automatically protected from excessive pressures at three independent points. A mechanical outside safety valve is provided as a check on the electrical limit switch and

Specialists in the Unusual

Rhodium
ELECTROPLATING SOLUTIONS

Technological knowledge acquired through many years of experience, plus special processes and equipment, assure the high quality of our Rhodium Plating Solutions.

Recommended for contact surfaces of switches, waveguide parts and other electrical applications, such as printed circuits...Can be applied in extremely heavy deposits, up to 100 milligrams per square inch.

Rhodium plating provides the advantages of whiteness, lustre and corrosion resistance of a precious metal.

Consult our staff, without obligation, about your specific plating problems.

SIGMUND COHN MFG. CO., INC.
121 SOUTH COLUMBUS AVENUE · MOUNT VERNON, NEW YORK

SINCE 1901

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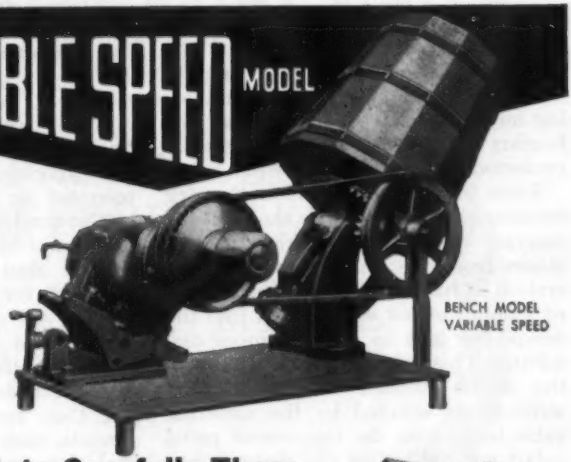
INVESTIGATE THIS TIME-SAVING

VARIABLE SPEED MODEL



BENCH MODEL
VARIABLE SPEED

Bench-Type Single Speed

No. 5—Single Speed

No. 5A—Single Speed

No. 6—Single Speed

Note Carefully These IMPORTANT POINTS

Barrels can be filled with parts or abrasive—*while running.*

Work can be watched — samples removed for inspection — *while running.*

Angle can be changed for best abrasive or polishing action — *while running.*

Barrels can be emptied by tilting to pouring position — *while running.*

Barrels are made in various sizes, shapes, and materials. They are easily replaced.

No. 5—Variable Speed

No. 5A—Variable Speed

No. 6—Variable Speed

If You're a Tumbler, Send for This NEW CATALOG

THE HENDERSON BROS. COMPANY

"The Tumbling Barrel People"

134 SOUTH LEONARD STREET
WATERBURY, CONNECTICUT

SINCE 1880 DESIGNERS AND BUILDERS OF TUMBLING BARREL EQUIPMENT

For more data circle 390 on Postpaid Card

by-pass valve. Heating coils are protected by a control which stops the entire unit should the water supply fail or become inadequate, eliminating any possibility of burning out the heating coils. The electrical system is protected by an overload switch.

From the point at which the dry compound is placed in its tank until it emerges as a super saturated jet of steam from the gun, the mixing operation is fully automatic. The required amount of hot water is fed into the compound tank to ensure proper dissolving. This solution is then fed into the steam stream in the desired strength as selected by the metering valve located on the instrument panel —but not until after the steam leaves the heating coils. In this way the heating coils are protected against clogging or obstruction.

The compound does not pass through the coils. A metering valve controls water content of the steam.

A specially designed burner used for this machine will operate on kerosene No. 1, No. 2 fuel oil, or light diesel oil.

The Circo unit is available in stationary or portable models of 120-gallon capacity. The portable units are mounted on a free-rolling carriage.

The machine is supplied with a balanced swivel-type cleaning gun with control shut-off. The steam can be shut off for unlimited time without stalling the unit.

Alternate attachments can be connected without stopping the motor. These attachments include the Aqua-Jet Gun for handling special compounds, such as paint strippers or special cleaners, when it is not desirable to change the compound in the tank, or for short runs; and the Radi-Flush, for cleaning and reverse flushing of

Sethco *Filters Fast*

FROM
START
SELF PRIMING
instant filtration
TO
FINISH
Automatic
Backwash
Reversal
Switch

LSIN-20V

Models equipped with corrosive resistant alloys and materials for every electroplating and industrial solution from pH 0 to pH 14. Removes particles down to one micron in size.

Sethco Mfg. Co.
2292 Babylon Turnpike, Merrick, L.I., N.Y. MAyfair 3-4220

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TRUE BRITE
BRASS SOLUTION

A foolproof solution which has been in use over 6 years in light and heavy production.

- Ready To Use—Just Add Water
- No Variance in Color
- Trouble-Free—Little Supervision Needed
- Low Cost—Additions only once a day

Available in a variety of colors. Will match your sample.

Write for technical bulletin and prices.

TRUE BRITE CHEMICAL PRODUCTS CO.
Box 31, Oakville, Conn.

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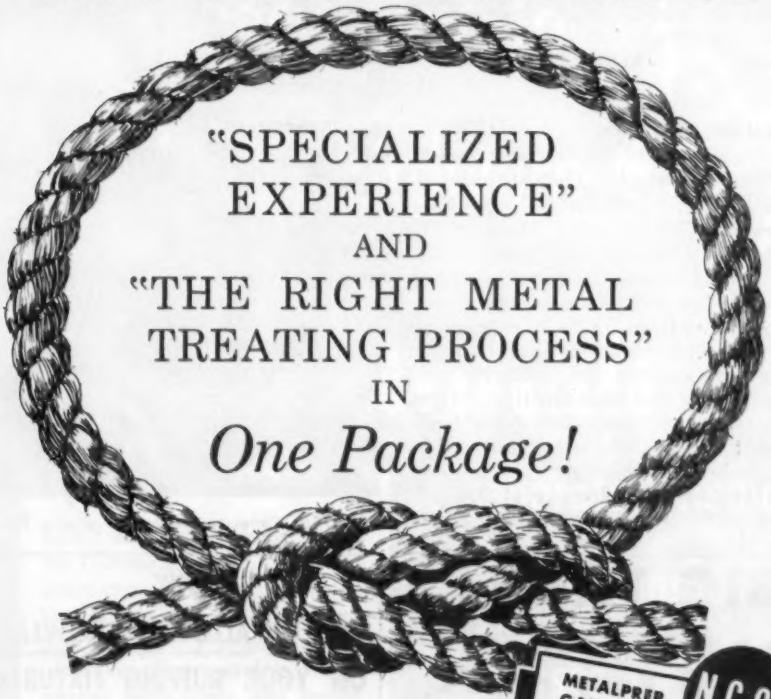
TIE IN GOOD PRODUCT DESIGN WITH A FINE PAINT FINISH



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products for
STEEL, ALUMINUM,
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clogged automobile, truck, tractor and other engine radiators.

For more data circle 18 on Reader Service Card

★ ★ ★

Vacuum Pump

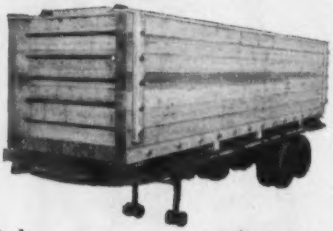
A high-capacity oil-diffusion booster vacuum pump has been introduced by NRC Equipment Corp., Dept. 23H, Charlemont St., Newton, Mass.

The B-12 booster unit with a 12-inch inlet diameter produces pumping speeds between 5200 and 6000 c.f.m. at pressures from 0.8 to 5 microns of mercury. This range is important in many applications, particularly vacuum melting and heat-treating, where product quality and yield have been shown to be superior when pressure is held to below 5 microns.

A forepressure tolerance of 900 microns makes the B-12 booster useful

NRC High-Capacity Booster Vacuum Pump

BIG TANKS
...or small
to fit *your* needs



Made to meet *your* requirements... from only the finest woods. Over 75 years experience. Get free estimates.

WOOD TANK DIVISION

Kalamazoo | TANK & SILO CO.

1571 Harrison Street, Kalamazoo, Michigan

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WHY
DO YOU ALLOW RAPID WEAR
ON YOUR BUFFING FIXTURES

when they can be *FUSECOATED* to last up to a year or more? We specialize in protective coatings for fixtures of all kinds and would like to add your name to our long list of regular customers.

Write
for our general information folder or send sample fixture or drawing of same to be FUSECOATED.

Fusion Metal Coating Co.
25493 West 8 Mile Road
Detroit 19, Mich.

For more data circle 395 on Postpaid Card

easy way to clean hardware

Cincinnati

...separates media

...washes

...rinses

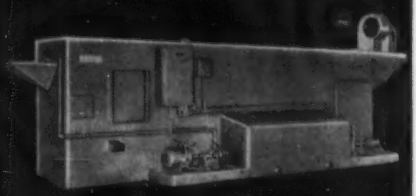
...dries

automatically!

Labor and time savings are a big feature of this CINCINNATI drum-type Cleaning Machine installed in the hardware division of a big-3 automobile manufacturer. Space-saving design washes both parts and media from previous tumbling and burnishing operations, then separates media automatically.

Got a new *or* old cleaning or finishing problem? CINCINNATI engineers consistently prove time savings up to 75%, labor savings up to 81%, production increases of 120% and more! Write for details.

CINCINNATI CLEANING and FINISHING MACHINERY COMPANY
2008 Hageman St., Cincinnati 41, Ohio



For more data circle 396 on Postpaid Card

for installation in series with high vacuum diffusion pumps where maximum gas handling capacity is required in the submicron range. Applications of this nature include melting and heat treating furnaces, large vacuum metalizing systems and particle accelerators.

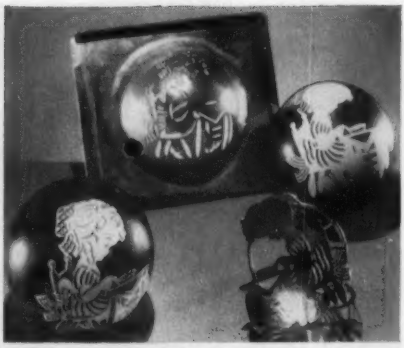
For more data circle 19 on Reader Service Card

★ ★ ★

Spray Masks for Round Objects

Round objects can be spray decorated easily and economically by the use of electroformed spray masks developed by Conforming Matrix Corporation.

With these masking devices, bright colors can be applied with better register and finer definition, the manufacturer states.



Conforming Matrix Electroformed Spray Masks: to paint designs on round objects

The masks are made of a special electroformed nickel which combines strength and ductility with rigidity, so that mask shape is retained.

Complete details on the method will be sent to anyone addressing Con-

LESS REJECTS... WITH A TOTALLY CLEAN SOLUTION!

ALSOP FILTRATION UNITS assure you a totally clean solution at all times, eliminating most of your troubles before they start.

★

The ultimate in filtration is described in our FREE NEW catalog—it's yours for the asking.

ALSOP ENGINEERING CORP.

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Randolph

EXPERIENCE and RESEARCH MEAN

BETTER FINISHES for your products

LACQUERS • ENAMELS
DOPES • THINNERS
CLEAR METAL FINISHES
COLORED LACQUERS
CLEAR S.G. FOR METAL
TEXTURE ENAMELS
SPECIALIZED PRODUCTION FINISHES
AIRCRAFT FINISHES

Depend on us for Prompt Delivery

RANDOLPH PRODUCTS CO.
CARLSTADT, N. J.

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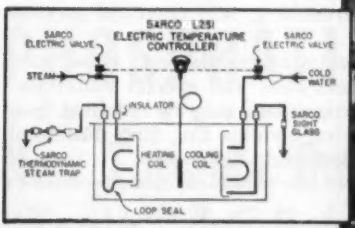
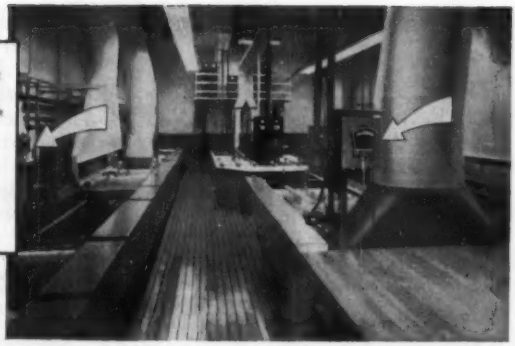
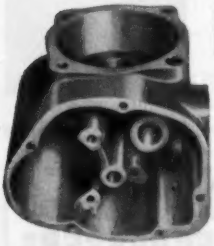




Scientific plating department of Woodward Governor Co., Rockford, Ill., meets exacting government specifications. All plating and cleaning process tanks are equipped with Sarco Electric Indicating Temperature Controllers.

Tough precision plating problem solved by low-cost Temperature Control



0.0002" tolerance held by Woodward Governor in plating irregular and deeply recessed surfaces

PROBLEM—Look at the above case for an aircraft propeller governor. Its irregular shape and deep recesses present a tough plating problem.

Furthermore, Uncle Sam specified a top quality plate with a thickness tolerance of 0.0003 to 0.0005 inch... to assure mating of parts.

SOLUTION—Key to the solution of this precision plating problem is control of all the variables...and by far the most important is *bath temperature*. When it fluctuates, so does the plate quality... current density is affected...and, therefore, throwing power varies, causing uneven plate thickness.

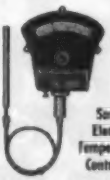
That is why *all* Woodward Governor plating tanks are equipped with Sarco Electric Indicating Temperature Controllers, which automatically hold the plating solutions to ±½°F.

RESULTS—A top-quality deposit. Throwing power that assures uniform plating thickness on all surfaces... plane, irregular and recessed. Tolerance of 0.0002 inch... actually closer than government specifications. Minimum rejects.

Mr. Delbert L. Zeigler, plant manager of Woodward Governor, writes: "Sarco Electric Temperature Controls are doing an excellent job in every way."

Write for Handbook No. 6 or consult your plating supplies jobber. Sarco Company, Inc., 635 Madison Avenue, New York 22, N. Y.

5150-9



Sarco Electric Temperature Controller

ADVANTAGES FOR ALL TYPES OF PLATING

LOW COST—about $100

EASY ADJUSTMENT—turn one knob to change temperature setting

ELIMINATES DIFFICULTIES often caused by unreliable manual temperature control:

- Changes in current density
- Variations in plate thickness
- Variations in quality
- Dull finishes
- Breakdown of plating solutions
- Crystallization of salts
- Rejects

SARCO

improves product quality and output

For more data circle 399 on Postpaid Card

forming Matrix Corporation, 356 Toledo Factories Bldg., Toledo 2, Ohio.
For more data circle **20** on Reader Service Card

★ ★ ★

Spray Nozzle

A spray nozzle recently introduced by Spraying Systems Co. produces an extremely wide spray pattern.

Wide-Spray Nozzle

This model of the company's line of Fulljet Spray Nozzles operates at a spray angle of 120 degrees, offering better coverage of area being sprayed.

Typical applications include rinsing, cooling, foam breaking, dust control, air and gas washing, fire control drenching, and chemical processing.

Nozzles are available in brass, steel, stainless steel and special materials.

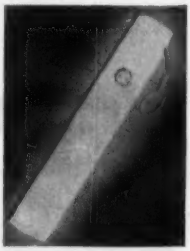
Further data may be obtained from Spraying Sytems Co., 3229 Randolph St., Bellwood, Ill.
For more data circle **21** on Reader Service Card

★ ★ ★

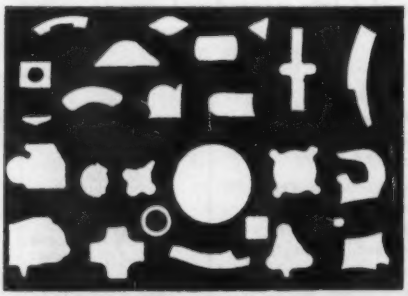
Anode Bag

Manufacturer: Hanson-Van Winkle-Munning Co., Matawan, N. J.

Description: Bag has string attached to the top, which is drawn around the top and tied to hold bag securely, eliminating tucks, eyelets and stitch-



Easy-Tie Anode Bag



Pre-Cut Masks Speed Finishing

Brady Pre-Cut Masks are self-sticking — go on fast and accurately. Protect from finishing to inspection. Hundreds of shapes and sizes in stock, for paint spraying, baking, tumbling, etc. Specials made to order. Fast delivery. Distributors in 150 cities.

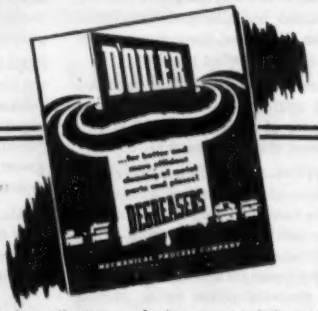
Write for free samples and Bulletin 160-C.

W. H. Brady Co.

746 W. Glendale Ave., Milwaukee 9, Wis.

For more data circle 400 on Postpaid Card

Send for this folder on D'OILER DEGREASERS



Contains all types of degreasers: Laboratory, Two-Dip, Three-Dip, Vapor Spray, Barrel Type, Automatic, Semi-Automatic, Driers, Stills and Specials.
When the job needs a degreaser . . . there's a D'OILER for the job.

mechanical process co., inc.
392 VALLEY ST. • SOUTH ORANGE, N. J.

For more data circle 401 on Postpaid Card

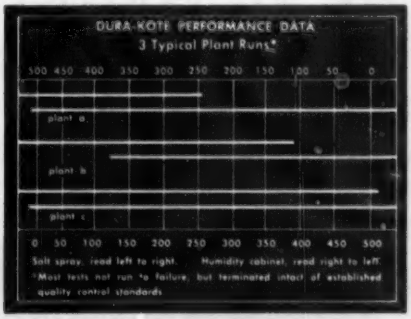
DuBOIS

PHOSPHATIZING BULLETIN

New Formula Dura-Kote Gives Excellent "Tooth" For Paint—Low Using Cost—No Dusting—No Sludging—Maximum Paint Adherence, Too

By Samuel J. Miller, *chemical director, The DuBois Co., Inc.*

Dura-Kote is the easily controlled, non-sludging, detergent-phosphatizer for cleaning and surface conditioning metal. Assures adherence of paints, enamels, japans and other organic finishes, particularily under severe conditions or where water, humidity, equipment or soil conditions have caused trouble with streaking or apparent rusting.


DURA-KOTE PERFORMANCE DATA
3 Typical Plant Runs*
500 450 400 350 300 250 200 150 100 50 0
plant a
plant b
plant c
0 50 100 150 200 250 300 350 400 450 500
Salt spray, read left to right. Humidity cabinet, read right to left.
*Most tests not run to failure, but terminated intact of established quality control standards

Dura-Kote *cleans and phosphatizes in one stage.* The gray-bluish colored phosphate coating deposited by the Dura-Kote solution gives excellent "tooth" for paint. Should the painted object get scratched or gouged, Dura-Kote forms a corrosion barrier which stops rust spread. Paint films show maximum resistance in humidity cabinet testing.

Note the low use cost feature of Dura-Kote because of high square footage per pound yield of phosphatized metal. Works for long periods and is easy to control. *The bath works for many days* with simple one product additions to tank based chiefly on direct titration.

FREE DAILY CONTROL RECORD BOOK

Send a copy of DuBois Daily Control booklet for 3- and 5-stage phosphatizing operations, without obligation:

Name_____

Plant Name_____

Address_____

City, State_____

The **DuBOIS** *Co., Inc.*

1120 West Front Street, Cincinnati 3

Representatives and Warehouses Coast-to-Coast

CINCINNATI • LOS ANGELES • NEW YORK • DALLAS

For more data circle 402 on Postpaid Card

ing. Bag is desized and shrunk. Wide range of materials available to suit specific plating requirements. Easily opened for inspection.

Applications: Where ease of handling, long life and cloth especially suited for the application are desirable.

For more data circle **22** on Reader Service Card

★ ★ ★

Addition Agent

An addition agent called Alkontrol is formulated to reduce hexavalent chromium. The reduction, which is permanent, relieves plant operators from constant attention and frequent additions to their cleaning baths.

When used in a copper strike, Alkontrol, a product of Northwest Chemical Co., 9310 Roselawn Ave., Detroit, Mich., improves the deposition on copper casting patterns, improves plating in low current density areas and eliminates some causes of blistering, the manufacturer states.

Alkontrol is added directly to cleaning baths at the rate of ¼ oz./gal. Excess use is not harmful and carry-over from strike to bright copper causes no ill effects, it is stated.

This additive is also effective in rack stripping baths.

For more data circle **23** on Reader Service Card

★ ★ ★

Filter Cloth

Polymax filter cloth, designed for heavy-duty applications, is manufactured from olefin polymers commonly known as high-density polyethylene.

Tensile strength is 50,000 to 100,000 p.s.i. and elongation is from 5 to 10 percent. This cloth has a softening temperature of 260 deg. F. The fabric is finished so that exposure to temperatures of 230 to 240 deg. F. result in minimum shrinkage.

In general, Polymax equals or exceeds the chemical resistance of conventional polyethylene.

Samples and test data are available from National Filter Media Corp., 1717 Dixwell Ave., New Haven, Conn.

For more data circle **24** on Reader Service Card

QUALITY EQUIPMENT
PRICED RIGHT AND READY FOR IMMEDIATE SHIPMENT

BUFFING AND POLISHING EQUIPMENT

100 Hammond—Divine—U. S. Electric—Holland — Standard Electric — L'Hommedieu single speed and variable speed buffing and polishing machines. 1 to 20 HP.

6 Rotary Machines: Hammond—Acme—Packermatic.

Complete buffing systems for above machines, including hoods, cyclones, dust boxes, pipes, motors and blowers; various sizes.

Semi-automatic machines: Buffalo—Hammond Acme—Divine—Production.

ALL EQUIPMENT IN STOCK
INSPECTION INVITED

all quoted subject to prior sale.

J. HOLLAND & SONS, INC.
485 KEAP ST., B'KLYN, N. Y., STagg 2-2022

For more data circle 403 on Postpaid Card

PAINT MIXER
MIRACLE PAINT REJUVENATOR

All paint restored to original consistency without opening the can.
2 minutes per gallon.

MIXERS AVAILABLE
¼ PT. to 55 GALS.

MIRACLE PAINT REJUVENATOR COMPANY
127 E. 9th St., St. Paul 1, Minn.

5 GAL. MODEL

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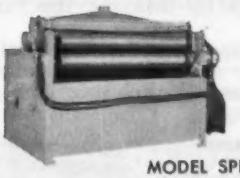
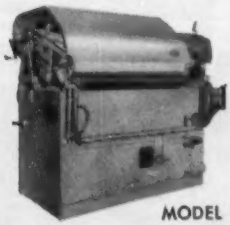
Cut Unit Polishing Costs in Half!

TIMESAVER *SPEEDBELT** ABRASIVE MACHINES



MODEL SPL
24", 36" & 50" belt widths



MODEL TOP
24", 36", 50" & 54" belt widths

Both Models of the Timesaver "Speedbelt" Abrasive Machine can be used in tandem for automatic polishing of tops and bottoms of material being processed . . . in one operation.

Mechanize polishing of aluminum, stainless steel and other metal sheets, bars and blanks — perforated or solid

TIMESAVER *SPEEDBELT* Abrasive Machines are the fastest and easiest machines to set-up for production polishing schedules on the market today. Abrasive belts with grit range from 40 to 220 can be changed in 5 minutes or less. Adjustment for stock thickness can be made in seconds. Feed speed is variable from 35 to 80 SFM with lower or higher speeds optional in addition to polishing, Timesaver Machines are used for metal finishing and deburring operations.

Write Today . . . send for the on-the-job story of Timesaver Machines polishing metal grilles and folder describing in detail all the Timesaver features, construction and specifications.

TIMESAVER SANDERS

P.O. BOX 7446 • ROBBINSDALE STATION
MINNEAPOLIS 22, MINNESOTA
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Page 140

News of the Industry

New plants . . . company news . . .
new positions . . . meetings . . . necrology . . .

NEW PLANTS

Pennsalt Chemicals Corporation has selected a ten-acre area near Oakville, Ontario, as the site of its first plant in Canada, President William P. Drake has announced. As a component of Pennsalt Chemicals of Canada, Ltd., a wholly-owned subsidiary, the new unit will facilitate the distribution of Pennsalt chemical specialties not now available in eastern Canada. Initial product lines will include metal processing chemicals, sanitizing agents used in food processing and dairy plant operations, laundry and dry cleaning chemicals, and numerous other Pennsalt and "Sharples" brand specialty products.

William B. Billingsley, formerly associated with Canadian Industries, Ltd., and director of company sales in eastern Canada since 1954, has been named vice-president and resident manager of Pennsalt Chemicals of Canada. **Albert H. Clem,** general manager of Pennsalt's Chemical Specialties Division, will serve as vice-president and general manager of the new subsidiary from corporate headquarters in Philadelphia.

COMPANIES

One of the world's largest manufacturers of springs has recently installed continuous automatic finishing equipment, gaining a 25 per cent production increase as a result.

The finishing unit, built by **Paasche Airbrush Company,** Chicago, handles the full output of the preceeding shot peening operation: 1370 spring leafs per hour.

The purpose of this paint coating is to increase the life expectancy of the springs by delaying the rusting process.

Aluminum paint is employed. To prevent the aluminum paint from settling out and coagulating, air-motor

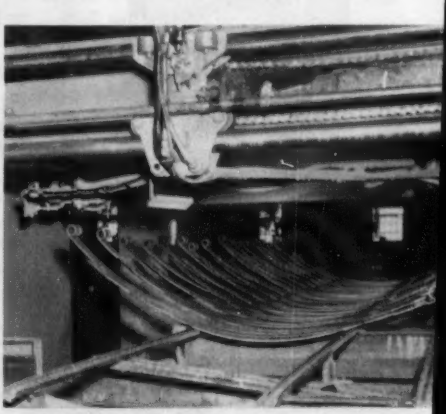
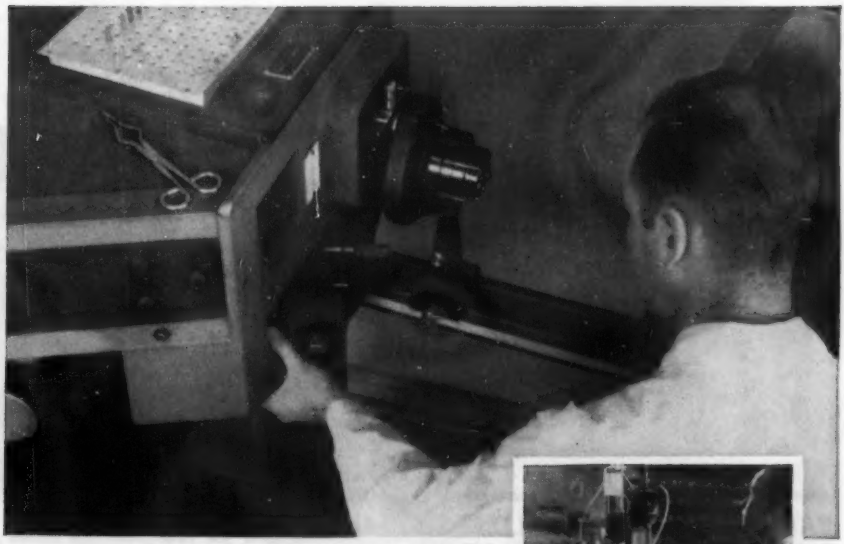


Fig. 1 — Gun carriage rides on two solid steel runners. Guns are momentarily shut off and carriage direction reversed when switch is tripped by cam brackets on the center bar.



"Al, you must be crazy . . ."

"A few years ago we decided to make our Quality Control Lab as good as could be found anywhere. We staffed it with first rate people and bought the latest in equipment including the finest Spectrographic Instrument available. At this point, our accountant — you know the type — a nice enough guy, but never happy unless he's shaking his head and wiggling his fingers at you . . . said to me, 'Al, you must be crazy, putting all this money into Quality Control.'

"Well, it took a lot of doing — and plenty of dollars, but it was worth it. We've grown steadily and it sure is a nice feeling to know that many of our regular customers include the finest platers in the country.

Illustrated are several views of our all new Wet and Spectrographic Laboratories, including some of the finest quality control equipment available.

A. Kerzner
President

If you're a user of Copper, Nickel or Zinc Anodes, and if quality (at a competitive price) is an important factor, contact us! We can manufacture them to your specifications.

NEW JERSEY METALS COMPANY 724 Rockefeller St., Elizabeth 2, N. J.

Serving Industry from Coast to Coast — since 1920

ELizabeth 4-6336

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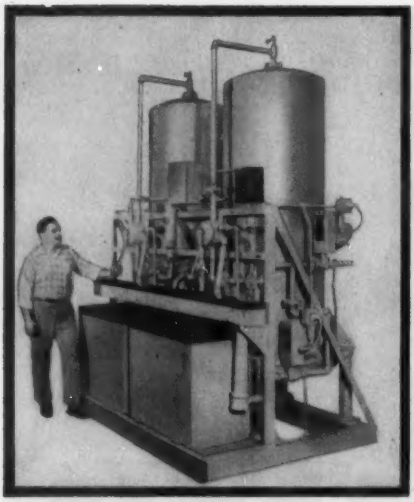

BARNSTEAD DEMINERALIZERS FOR METAL FINISHING IN CAPACITIES OF FROM 30 to 2500 G.P.H.

In rinsing or plating . . . in anodizing or make-up . . . in fact, wherever pure, mineral-free water is a necessity . . . Barnstead Demineralizers can save you money. First, because they are versatile: they come in all sizes from 30 to 2500 gallons per hour and in mixed-bed, two-bed, and four-bed models. Second, because they are low-cost in operation, producing pure water for as little as 5c per thousand gallons. Third, you get authoritative answers from Barnstead — with over 75 years' experience in ALL phases of producing pure water for all industrial applications.

NEW LITERATURE:

Catalog 127-A illustrates Barnstead's complete line of water demineralizers, and presents factual information which can help you reduce waste and save money.

Barnstead
STILL & DEMINERALIZER CO.

12 Lanseville Terrace, Boston 31, Mass.

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agitators are installed in the paint pressure tanks.

To ensure against down time on the twenty-four hour operation of the

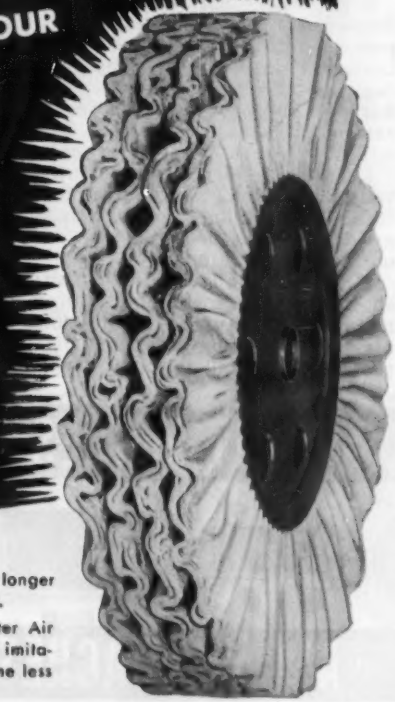
Fig. 2—Two guns on each arm are aimed for the direction and set for the pattern necessary to completely coat the parts, which are of varying sizes. Spring leafs are in the proper sequence of size to facilitate assembly.

Fig. 3 — Inspecting a finished spring leaf. The filter booth finishing section draws paint overspray and exhausts fumes to the outside. (Photographs courtesy Paasche Airbrush Co.)

Schaffner Bias Buffs

your answer for economical performance

- TAILOR MADE FOR YOUR TOUGHEST BUFFING OPERATIONS
- FULLY VENTILATED
- COOLER RUNNING
- LOW COMPOUND CONSUMPTION
- FEWER SECTIONS NEEDED
- GIVES LONGER LIFE



The buff you select is all important—it will mean longer buff life and greater production from a buff wheel.

Specify and buy the proven Schaffner Metal Center Air Cooled bias (type) Buff, and don't be satisfied with imitations. You'll find Schaffner buffs last longer, consume less compound and reduce rejections.

Write us. We'll run a test for you in your own plant and prove our claims.

Schaffner

MANUFACTURING COMPANY, INC.

SCHAFFNER CENTER • ROSEWOOD 1-9801 • EMSWORTH PITTSBURGH 2, PA.

• TRIPOLI COMPOUNDS • CHROME COLORING ROUGE • GREEN ROUGE • JEWELERS' ROUGE • CROCUS COMPOUND • STAINLESS STEEL COMPOUNDS • ALUMINUM BUFFING COMPOUNDS • ALL-PURPOSE BUFFING COMPOUNDS • WHITE COLORING COMPOUNDS • NICKEL BUFFING (LIME) • EMERY CAKE • PLASTIC BUFFING COMPOUNDS • TALLOW GREASE STICK • PUMICE GREASE STOCK • POLISHING WHEEL CEMENT • STEEL POLISHING COMPOUNDS

COMPOUNDS MADE IN BAR, SPRAY OR PASTE

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finishing unit, two sets of heads and tips are available for each gun. Every twenty-four hours, the heads and tips are replaced with the alternate set. Then the dirty ones are disassembled, cleaned, inspected and made ready for use in the next twenty-four hour period.

★ ★ ★

Eighty per cent of the equipment displayed by **NRC Equipment Corporation** at the 39th National Metal Congress and Exposition, held in Chicago on November 4-8, was introduced in the past year. The company showed five major products, four of which were not available a year ago.

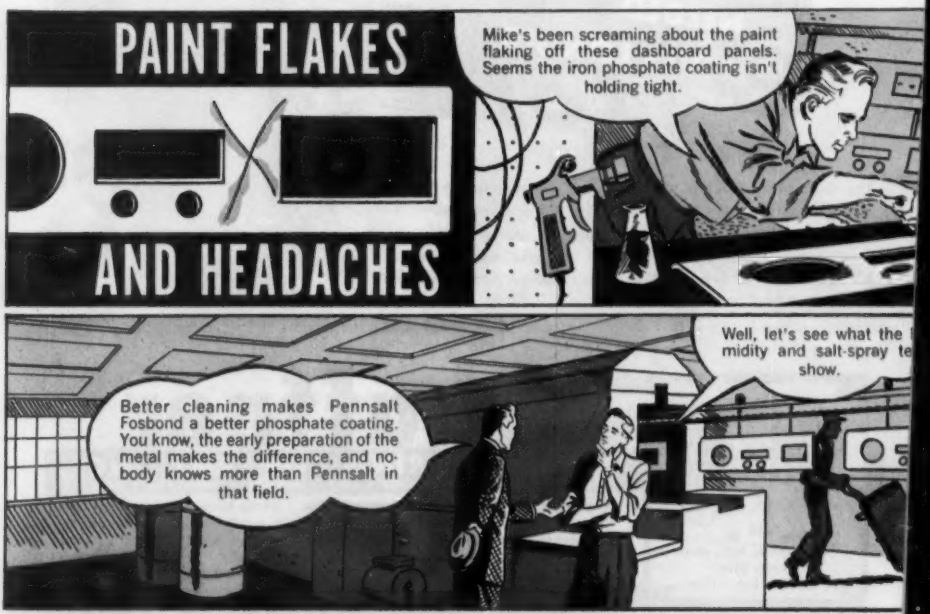
Equipment displayed included a vacuum furnace, a vacuum induction furnace, a combination arc furnace, a vacuum leak detector, and a vacuum metalizing unit.

Though seen before at metal shows, vacuum metalizing equipment has gained many new applications. A planetary rotating jig from an NRC production metalizing unit displayed the broad variety of products of the metalworking industry which now employ this method to produce decorative and functional metallic coatings. NRC vacuum metallurgical production units too large to display—a 3000-pound induction unit and a 5000-pound arc unit (the largest commercial unit of this type ever sold) were pictorially displayed at the NRC booth.

Among those present at the NRC Equipment Corporation booth were S. Sydney Minault, vice president-general manager; Walter G. Overacker, manager of equipment sales; Byron Ellis, Chicago district manager; Gilbert King, Jr., sales promotion manager; David N. Reece, product manager, Vacuum Furnace Section.

★ ★ ★

A new four-foot Rotoblast table room for cleaning castings, forgings and stampings in foundries and plants that require a small, flexible machine for a wide range of cleaning opera-

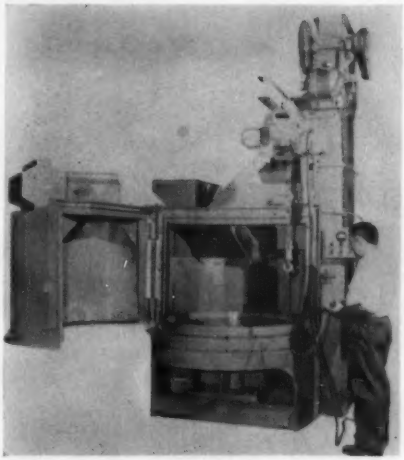

PAINT FLAKES
AND HEADACHES
Mike's been screaming about the paint flaking off these dashboard panels. Seems the iron phosphate coating isn't holding tight.
Better cleaning makes Pennsalt Fosbond a better phosphate coating. You know, the early preparation of the metal makes the difference, and nobody knows more than Pennsalt in that field.
Well, let's see what the
midity and salt-spray te
show.

tions was demonstrated for the first time at the National Metals Exhibition by the **Pangborn Corporation,** Hagerstown, Md., manufacturer of blast cleaning and dust control equipment.

Capable of Rotoblasting a 4000-pound load up to 48 inches in diameter by 24 inches high, this unit is equipped with a cast labyrinth abrasive-sealing system which makes the cabinet abrasive tight without rubber gaskets.

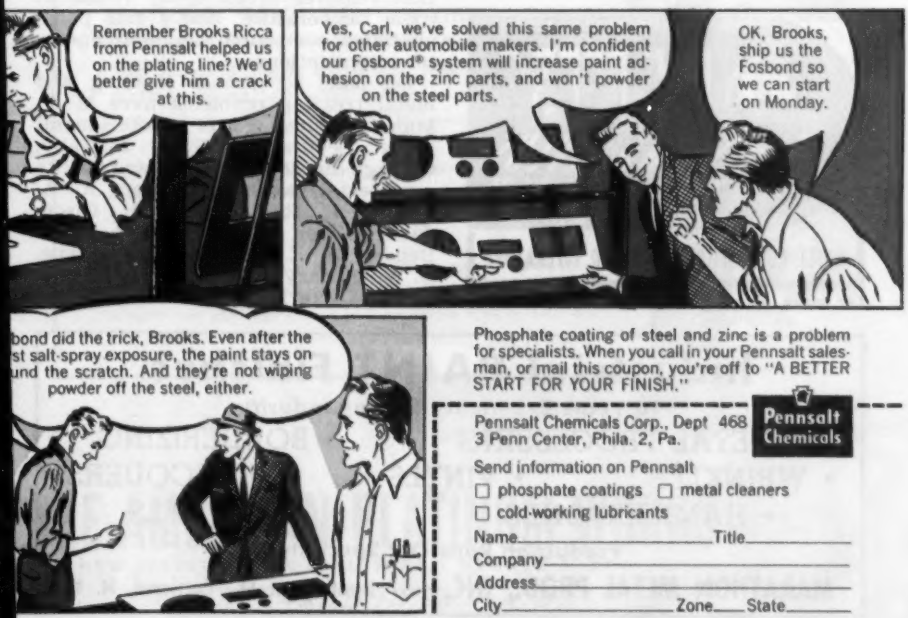
The standard table is equipped with a single Rotoblast wheel, powered by a 10-h.p. motor which will throw 15,000 pounds of abrasive per hour. An optional 15-h.p. motor is available that will throw 22,000 pounds of abrasive per hour.

Also exhibited were a Pangborn Hydro-Finish cabinet, used for liquid blast cleaning in process and maintenance operations, a Blastmaster barrel for batch blast cleaning of castings, forgings and heat treated parts and the unit-type CN Cloth Bag dust collector, designed for dust collection in low-volume applications.



Pangborn Four-Foot Rotoblast Table Room

Those in attendance at the Pang-


Remember Brooks Ricca from Pennsalt helped us on the plating line? We'd better give him a crack at this.
Yes, Carl, we've solved this same problem for other automobile makers. I'm confident our Fosbond® system will increase paint adhesion on the zinc parts, and won't powder on the steel parts.
OK, Brooks, ship us the Fosbond so we can start on Monday.
bond did the trick, Brooks. Even after the st salt-spray exposure, the paint stays on und the scratch. And they're not wiping powder off the steel, either.

Phosphate coating of steel and zinc is a problem for specialists. When you call in your Pennsalt salesman, or mail this coupon, you're off to "A BETTER START FOR YOUR FINISH."

Pennsalt Chemicals

Pennsalt Chemicals Corp., Dept 468
3 Penn Center, Phila. 2, Pa.

Send information on Pennsalt

☐ phosphate coatings ☐ metal cleaners
☐ cold-working lubricants

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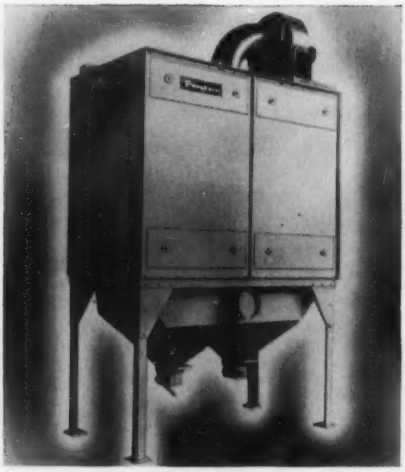


Pangborn Unit-Type CN-Dust Collector

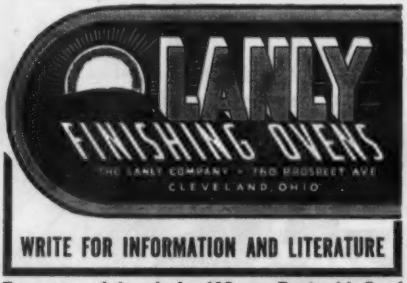
born booth included A. J. Buckley, general sales manager; A. L. Gardner, advertising manager; J. R. McConnell, manager, abrasive sales; L. W. Wagner, Chicago district manager; L. W. Unger, Indianapolis district manager; O. H. Edwards, Cincinnati district manager; Frank Newell, Quad-Cities district manager; R. W. Gossard, A. A. Milkie, H. J. Niemann and A. J. Szabo, district sales engineers.

★ ★ ★

New materials for phosphatizing, barrel finishing, rust and scale removal, and paint stripping were featured at the National Metal Exposition by **Oakite Products, Inc.**, manufacturer of cleaning and related compounds for the metal industry.

Materials displayed included a nonfoaming alkaline detergent designed to remove identification inks from aluminum; a barrel burnishing compound said to produce superior color and luster; a powdered acid scale and rust remover; a solvent acid stripper that removes tough epoxy resins at room temperature; and a zinc phosphatizing compound for low-temperature applications.

On hand to discuss cleaning and metal treating problems were M. F. Maher, Jr., manager of Oakite's metal industries division; F. J. McNally, Chicago division manager; and Oakite representatives A. H. Green, A. A. Becker, R. R. Davis, E. H. Olson, Jack Becker, K. J. Birdwell, R. J. Bender, R. E. O'Brien, R. J. Crane, D. W. O'Leary, J. E. Sauve, J. C. Ruttle, N. Carter, and G. T. Keeley.



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MARATHON METAL PROD., INC. • 67 Huntington St., Cortland, N. Y.

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NEW SHAPED, EXTRUDED APW SILVER ANODES

CONTROLLED GRAIN SIZE: APW EXTRUSION PROCESS* controls grain size within definite limits — minimizes sheddings

These scientifically shaped anodes retain 80% of original active surface area after 85% by weight has been plated off!

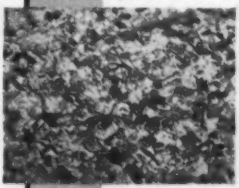
Costs are lowered by prolonged anode life, minimized polarization and less silver scrap to be refined.

In addition, the APW Extrusion Process controls grain size within definite ideal limits so that corrosion is smooth and uniform. Electrodeposits are *consistently* smooth. Shedding is virtually eliminated. Rejects are a comparative rarity!

We are anxious that the silver you buy in anodes is used most efficiently and economically. Special anode shapes will be engineered to meet your particular plating bath conditions. Call or write for a representative. We'll be glad to assist with your plating problems.

*Pat. Pending

ROLLED FLAT PLATE ANODE SECTION: This Photomicrograph shows highly irregular, uncontrolled grain size—a major cause of shedding and resultant rough electrodeposits.



APW EXTRUDED ANODE SECTION: Small, fully controlled regularity of grain size promotes uniform corrosion, smoothest electrodeposits, less rejects.

THE AMERICAN PLATINUM WORKS

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APW

ENGELHARD INDUSTRIES

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At the 39th National Metal Exposition and Congress, a self-contained cleaning set-up in a single cabinet was shown by **Branson Ultrasonic Corporation,** Stamford, Conn.

Including a heater, temperature control, filtration and recirculation system in addition to the ultrasonic generating equipment, Model R-50 is small enough to be moved about easily. Overall dimensions are 22 by 19 by 37 inches high. Piping, pump and filter are of stainless steel with Teflon gaskets, making the unit suitable for alkaline solutions, solvents, and mild acids.

The size of the tank itself is 6 by 16 by 11 inches deep, with a total working volume of 5 gallons. The transducers have a rated input of 250 r-f watt average (1 kw. peak), which they convert into mechanical vibrations at 38 kc. This high-speed agitation causes cavitation in the liquid, providing a gentle but thorough scrubbing action. Other types and sizes of Sonogen ultrasonic generators, transducers, and stainless steel tanks were also on display.

Introduced at the 39th National Metal Exposition & Congress, Sonogen Model R-50 self-contained ultrasonic cleaner is the newest equipment engineered by the Branson Ultrasonic Corporation, Stamford, Connecticut.

In addition to cleaning equipment, Branson showed the new recording Vidigage, together with some of its accessories. This resonance-type instrument for non-destructive testing is capable of measuring thicknesses of metals and plastics, even when access to only one side is possible. An automation converter, also designed and built by Branson, permits the

"REALLY ENJOYED IT"

"Thank you for the privilege of taking your most interesting and informative course. Most technical courses are rather dry stuff but your way of explaining is in such a 'down to earth' manner that I really enjoyed it!" writes plating supervisor E. M. Ivey of Akron, Ohio. Chances are, you'll enjoy it too! Write **Joseph B. Kushner, Electroplating School, 115 Broad St., Stroudsburg 80P, Pa.,** TODAY!

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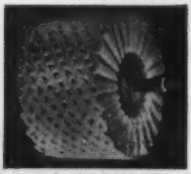
Buff Cooler, Faster with 45° Spoke Buffs



Patented mounting maintains best cutting angle of 45° for faster, smoother cutting with less pressure. Ventilation from 24 openings. We also mfg. all types of buffs.

Write for folder.

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"GRIPALLOY"

. . . Attractive satin sheen primer in black and colors . . .

. . . Amazing tight adhesion to 25 different metals as reported by a large electrical manufacturer . . .

. . . Excellent resistance to Salt Spray, Gasoline and Solvents.

TENAX, Newark, N. J.

Lacquers—Enamels

Synthetics—Varnishes

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signal from the Vidigage to be amplified and used to operate many types of recording, controlling, or actuating devices.

Messrs. Norman G. Branson, Peter K. Bloch, and Kenneth Hayes were in attendance during the show, to demonstrate the equipment, and help solve problems in ultrasonic cleaning and ultrasonic testing.

★ ★ ★

A demonstration of Bede Airless Spray Painting was presented each day during the 1957 National Metals Exposition.

This spraying system, developed by the **Bede Products Corporation,** Amherst, Ohio, uses no air to atomize the paint, thereby minimizing the overspray problem. By reducing overspray to a minimum, health and fire hazards are reduced. It is possible to spray all general finishing and coating materials.

★ ★ ★

A full-size show conveyor—actually operating—was displayed by the **Chainveyor Corporation** at the National Metal Exposition in Chicago.

The Chainveyor installation demonstrated the versatility possible in this overhead conveyor system by combining vertical up and down curves with horizontal curves. A combination of power-and-free line operation, a new principle in overhead conveyors, was also displayed.

All component parts were shown, including the newly developed automatic cam-action carrier. This carrier is capable of holding a wide variety of flat materials, such as paper, cloth, and light-gauge metal sheets. A special grip can hold and carry single loads up to 30 pounds without marring surfaces or finishes. Instant automatic or manual release is obtained by simply applying a slight pressure on the extension of the cam arm.

Chainveyor was represented by Patrick T. Rauen, president; James N. Rauen, vice-president; Arnie Hilland, eastern division manager; Fred Vose, mid-western division manager; Ellis Jeffers, north central and Great Lakes division manager.

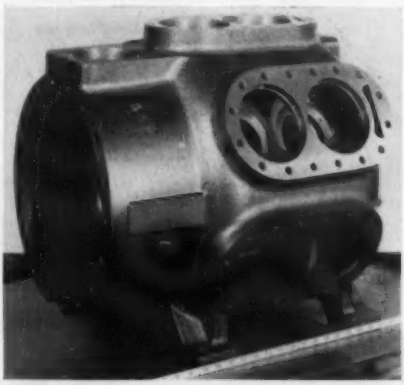
★ ★ ★

As barrel finishing equipment and methods advance, larger metal parts are being effectively deburred and finished.

Giant compressor housings (285 pounds, 2½ feet along the base), for example, are being deburred and polished in an Almco Model DBF-800-40-1 "fixture" machine. After barrel finishing, gasket surfaces are burr-free, with low microinch finish. The inside of the housing is clean, with all particles eliminated.

The "fixture" type barrel, made by **Almco Div., Queen Stove Works, Inc.,** Albert Lea, Minn., utilizes custom-designed fixtures to hold the large part securely during the work cycle, permitting abrasives to reach all surfaces.

The door-mounted fixtures are designed for easy removal with allied handling equipment.



Heavy compressor housings that measure up to 2½ feet in length are being barrel finished in Almco fixture-type machines. The housing shown is used by an air conditioning and heating equipment manufacturer.

On October 2, more than 50 members and guests of the St. Joseph Valley Branch, A. E. S., assembled to hear Ezra A. Blount, editor of PRODUCTS FINISHING, discuss "The Japanese Finishing Industry." Mr. Blount also showed the color movies which he made during his stay in Japan. A special invitation was issued by the speaker in the name of the Cincinnati Convention Committee, and all were urged to be on hand at the 45th Annual A. E. S. Convention to be held in Cincinnati May 19-22, 1958.
Seated at the head of the table (center background) is A. G. Wiegand, president of the St. Joseph Valley Branch. At Mr. Wiegand's left is Paul Glab, secretary-treasurer of the Chicago Branch, A. E. S. (Photograph by PRODUCTS FINISHING)

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TRAINING COURSES

Jim Marks went back to school recently, but not for reading, writing and arithmetic. His company, a large manufacturer of metal parts, sent him back to learn how to reduce labor and material costs in the finishing department.

Mr. Marks, superintendent of the finishing department, recently attended the spray painting school sponsored by **Binks Manufacturing Co.**, Chicago manufacturer of spray painting equipment.

MORSE DRUM UPENDER No. 32

Takes the strain and effort out of upending heavy drums. Has 40" handle offset 35° for top efficiency. Hefty 1¼" hook provides clearance for largest chime. 2½" x 8" toe plate spreads lifting pressure over large area to prevent drum damage. Order Several Today!

MORSE MFG. CO., INC. **$6.90** FOB

765 West Manlius St., E. Syracuse, N.Y.

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While in school, Mr. Marks learned how to select the right type of equipment for the job, and how to maintain it. "Knowledge of the operating and servicing of spray guns, paint circulating systems, material-handling pumps, oil and water extractors and compressors has enabled my department to reduce operating costs by 20 per cent," said Mr. Marks.

Conducted every month of the year except July and August, the classes are limited in number. The classes scheduled for the 1957 winter term, to be conducted at Binks' Chicago plant, will be held November 11 through 15, December 2 through 6, January 6 through 10, and Feb. 3-7.

A new booklet offered by Binks contains a complete description of the spray painting sessions as well as reservation forms. For a free copy, write B. J. Hedger, Binks Manufacturing Co., 3118-40 Carroll Ave., Chicago, Ill.

MEETINGS of INTEREST to FINISHERS

Nov. 6-8. 19th Annual Shop Practice Forum, Porcelain Enamel Institute, Ohio State University, Columbus, Ohio.

Jan. 11. Interim Meeting, A.E.S., Indianapolis, Ind.

Feb. 1. Annual Educational Session and Banquet, New York Branch, A.E.S., Hotel Statler, New York, N. Y.

Feb. 3-6. National Industrial Electric Heating Conference, Netherland-Hilton Hotel, Cincinnati, Ohio.

Feb. 14-15. Third Annual Technical Session and Banquet, Southeastern Branch, A.E.S., Dinkler Plaza Hotel, Atlanta, Ga.

May 19-22, 1958. 45th Annual Convention, A.E.S., Hotel Sheraton-Gibson, Cincinnati, Ohio.

A recent class of spray painting aspirants at the Binks Manufacturing Company's spray painting school gather around instructor William R. Brooks, to learn the "do's and don'ts" in using and maintaining spray painting equipment.

For Free Literature Circle Numbers on Card Inside Front Cover

PRODUCT LITERATURE

58. Oven Sections
Literature on lava-coated infra-red generators, which can be used to build heating panels or complete ovens. Dri-Quik Div., Dry Clime Lamp Corp., Greensburg, Ind.

59. Heating Process Solutions
A 52-page book gives technical information on the Dean Thermo-Panel Coil. Dean Thermo-Panel Coil Div., Dean Products, Inc., 622 Franklin Ave., Brooklyn 38, N. Y.

60. Extension Spray Guns
Tells how you can paint the ceiling from the floor, or reach out-of-the-way places. Eclipse Air Brush Co., 390 Park Ave., Newark, N. J.

61. Automated Barrel Finishing
Catalog describes and illustrates Almco Sub-O-Matic barrel finishing machines. Includes details on systems that have from 6 to 18 stations. Complete information on automatic programming, detailed diagrams of typical systems. Almco Div., Queen Stove Wks., Inc., 88 Marshall St., Albert Lea, Minn.

62. Brass Additive
Literature on Jelco Brass Additive, a brass brightener for standard brass solutions. Jelco Finishing Equipment Corp., 153 E. 26th St., New York 10, N. Y.

63. Electropolishing Stainless Steel
Describes baths used for electropolishing stainless steels, includes operating instructions for two of these baths. Electro-Glo Co., 1429 S. Talman Ave., Chicago 8, Ill.

64. Instructions for Use of Rhodium Plating Solutions
Handy, pocket-sized booklet gives valuable information on the proper procedures to use for rhodium plating. Includes sections on solution preparation, work preparation, temperatures and current, tanks, anodes, bath maintenance, and so on. Sigmund Cohn Mfg. Co., Inc., 121 S. Columbus Ave., Mount Vernon, N. Y.

65. Anodes
Information on copper, nickel and zinc anodes available in a variety of sizes and shapes. New Jersey Metals Co., 724 Rockefeller St., Elizabeth 2, N. J.

66. Sanding Machine
Information on air-operated portable sanding machines. Detroit Surfacing Machine Co., 1266 E. Eight Mile Rd., Detroit 20, Mich.

67. Felt Wheels
Information on felt polishing wheels and bobs, used for producing highly polished surfaces. Bacon Felt Co., 447 W. Water St., Taunton, Mass.

68. Tack Cloth
Use of Bond Tack Cloth assures a speck-free finish. Samples available. Bond Chemical Products Co., 2639 N. Clybourn Ave., Chicago 14, Ill.

69. Paint Arrestors
Information on RP Paint Arrestors, which filter out overspray paint from spray booth exhaust air, are easily replaceable. Research Products Corp., Dept. 38, Madison 10, Wisconsin.

70. Cleaning Compound
Data on Apex RPS cleaning compound, designed for heavy-duty soak and electrolytic cleaning of ferrous metals. Apex Alkali Products Co., Main and Rector Sts., Philadelphia 27, Pa.

71. Amorphous Coating Base
Information on Metabond, an amorphous coating base for improving the adhesion and corrosion resistance of any paint finish. International Rustproof Corp., 1575 Merwin Ave., Cleveland 13, Ohio.

72. Zinc Plating Solutions
Technical bulletin on the Promat zinc plating solutions. Promat Div., Poor & Co., Dept. PF-3, 851 S. Market St., Waukegan, Ill.

73. Buffing Compound
Data on the advantages of using Stutz Liquispray buffing compound. The Stutz Co., 4410 Carroll Ave., Chicago 24, Ill.

74. Screen Process Catalog
Catalog No. 57, a comprehensive list and description of a complete line of screen process colors, supplies and equipment. Advance Process Supply Co., 1442 W. Kinzie St., Chicago 22, Ill.

75. Demineralizers
Catalog 127-A illustrates complete line of demineralizers, presents information that can help to reduce waste and save money. Barnstead Still & Demineralizer Co., 12 Lanesville Terrace, Boston 31, Mass.

76. Plastic Ducts and Fume Hoods
Information on Duracor ducts and fume hoods, developed for handling fumes from highly corrosive operations. The Ceilcote Co., Inc., 4848 Ridge Rd., Cleveland 9, Ohio.

77. Surface Finishing
Information on Clair Model 209 for finishing continuous coil stock and long sheets. Clair Manufacturing Co., Inc., Olean, N. Y.

78. Quartz Ovens
Data on ovens equipped with quartz heating elements, designed to emit that part of the spectrum most readily absorbed by paints. Cleveland Process Co., 1965 E. 57th St., Cleveland 2, Ohio.

79. Flocking Machine
Bulletin gives operating details, other data on Peco Flocking Machine. Progressive Equipment Co., 8629 Mackinaw at Grand River, Detroit 4, Mich.

80. Vapor Degreasing Manual
A comprehensive, 32-page manual on vapor degreasing process, equipment and accessories. Circo Equipment Co., 124 Central Ave., Clark (Rahway), N. J.

81. Powdered Acid
The properties and uses of Oakite Drycid, the recently introduced powdered acid scale and rust remover, are described in a service report. The service report points out the convenience inherent in shipping, storing, and using a powdered rather than liquid acid; the lack of acid fumes; and the material's increased safety on various metals. One of the major advantages discussed is Drycid's greater safety when used to descale systems containing dissimilar metals. Recommended solution concentrations and application methods are given in the service report. Oakite Products, Inc., 20 Rector St., New York 6, N. Y.

82. Polishing Compositions
The most recent developments in liquid and bar buffing and polishing compositions as well as Stevens Slo-Slake Lime Composition are featured in a revised 18-page data package. Sections are devoted to: How Stevens L.V. Reports Helped Others, a list of successfully solved metal finishing problems; How To Test Buffing Compositions in the Plant; Stevens Composition Recommendations for Plated Surfaces; Stevens Composition Recommendations for Unplated Surfaces; Automatic Buffing Requirements, etc. Frederic B. Stevens, Inc., 1800 Eighteenth St., Detroit 16, Mich.

83. Steam Cleaning Machines
Bulletin P-5571 describes the Mark series of direct-fired Kelite Steam Cleaners. In addition to illustrations of each model, the bulletin carries a table of specifications, as well as a list of optional features. Kelite Corp., 81 Industrial Rd., Berkeley Heights, N. J.

84. Shot and Grit
Catalog covers SAE specifications of abrasive shot and grit, manufactured by the Abrasive Shot and Grit Company. Methods and proper abrasive mixtures for shot peening and impact cleaning are shown. Also listed are the characteristics, considerations and important uses for the entire line manufactured by the company. Abrasive Shot & Grit Co., Inc., Springville, (Erie County), N. Y.

85. Silk Screens and Inks
Data on silk screens and silk-screen inks. The Naz-Dar Co., 461 Milwaukee Ave., Chicago 10, Ill.

86. "The Story of Diamond Chemicals"
Graphically depicting in word and picture its diverse, growing family of chemical products for industry and agriculture, Diamond Alkali Company, Cleveland, Ohio, has published the fifth edition of The Story of Diamond Chemicals—Chemicals You Live By. Highlighting the important contributions of Diamond organic and inorganic chemicals to building a better America through chemical progress, this newly revised and enlarged, 32-page booklet presents a panoramic picture of these basic materials, their principal applications, and their production. Diamond Alkali Company, Public Relations Department, 300 Union Commerce Building, Cleveland 14, Ohio.

87. Anodes and Plating Chemicals
Bulletin AC-110 describes and illustrates line of anodes, anode accessories and chemicals for electroplating and metal finishing. Specifications and recommended applications are given for seven styles of anode bags, three types of diaphragms and eight types of anodes. The bulletin describes a number of salts commonly used in electroplating baths and 13 brighteners used in H-VW-M solutions. Hanson-Van Winkle-Munning Co., Matawan, N. J.

88. Anodizing Racks
A four-page brochure, "J & F Titanium Gives Anodizing Racks New Life," describes the superior corrosion resistance of titanium in anodizing operations. Johnston & Funk Titanium Corp., W. Kemrow Ave., Wooster, Ohio.

89. Automatic Plating Machines
Literature on Udylite Automatic Plating Machines. Udylite Corp., Detroit 11, Mich.

90. Electric Immersion Heaters
Catalog 50 gives full details on Chromalox Electric Immersion Heaters. Edwin L. Wiegand Co., 7522 Thomas Blvd., Pittsburgh 8, Pa.

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91. Filter Pumps
Data on filter pumps made of corrosion-resistant alloys for every electroplating and industrial solution from pH 0 to pH 14. Sethco Mfg. Co., 2292 Babylon Turnpike, Merrick, L. I., N. Y.

92. Cold Cleaner
Information on Chlorothene, used in all types of cold cleaning operations. Dow Chemical Co., Midland, Mich.

93. Rectifiers
Bulletin No. 956 describes company's line of selenium and germanium rectifiers, includes data on design features, applications, remote controls, etc. Regco Div., Crown Chemical and Engineering Co., 11545 W. Jefferson Blvd., Culver City, Calif.

94. Nameplates
Bulletin No. 177 describes self-bonding anodized aluminum nameplates, how to apply, typical applications. W. H. Brady Co., 746 W. Glendale Ave., Milwaukee 9, Wis.

95. Abrasive Belts
Performance data on Resinall Metalite Belts and Discs with "81 Coat." Behr-Manning Co., Div. of Norton Co., Troy, N. Y.

96. Cabinet Ovens
Bulletin describes heavy-duty cabinet ovens for baking, drying, lab work. W. W. Sly Manufacturing Co., 4784 Train Ave., Cleveland 1, Ohio.

97. Why Hot Spray?
Booklet explains advantages of using hot-spray process. Spee-Flo Corp., Dept. PF32, 720 Polk Ave., Houston, Texas.

98. Touch-Up
Folder tells some of the many ways that aerosol-packaged paints can be used by manufacturers of painted products. Sprayon Products, Inc., 2077 E. 65th St., Cleveland 3, Ohio.

99. Air Sanders
Descriptions of various models of pneumatically operated sanding machines. Sundstrand Magnetic-Pneumatic Products, Div. of Sundstrand Machine Tool Co., 1020 Ninth St., Rockford, Ill.

100. Rectifier Control
Technical study points out advantages of Reactron controls for plating rectifiers. Ther Electric & Machine Wks., 13A S. Jefferson St., Chicago 6, Ill.

101. Abrasive Belt Polishing Machines
An on-the-job-story of how Timesaver Sanders are used in polishing metal grilles. Timesaver Sanders, P. O. Box 7446, Robbinsdale Sta., Minneapolis 22, Minn.

102. Phosphate for Aluminum
Bulletin describes Golden Bonderite and companion product, Green Bonderite, both of which are used to prepare aluminum for painting. Parker Rust Proof Co., 2172 E. Milwaukee Ave., Detroit 11, Mich.

103. Vapor Degreaser
Complete technical data on Phillips 100 CS vapor degreaser, a compact machine designed for use in smaller plants or departments. Phillips Mfg. Co., 3457 W. Touhy Ave., Chicago 45, Ill.

104. Acrylic Enamel
Data on the characteristics of Duracron, a thermo-setting acrylic enamel that is said to have excellent adhesion to bare or primed metal; good hardness and impact resistance; resistance to modern detergents; good color and gloss retention. Pittsburgh Plate Glass Co., Industrial Sales Div., 1 Gateway Center, Pittsburgh, Pa.

105. Continuous Stripping
Complete technical information on RAP Tank Solvent No. 52, a stripper for continuously removing paint from conveyors, hooks, etc. Pockrandt, Inc., 1108 Marquette St., Bay City, Mich.

106. Electrostatic Painting
Photographs and data: the Ransburg No. 2 Process of automatic painting. Ransburg Electro-Coating Corp., Indianapolis 7, Indiana.

107. Buffs
Information on Schaffner Metal Center Air Cooled bias-type buffs. Schaffner Manufacturing Co., Inc., Schaffner Center (Emsworth), Pittsburgh 2, Pa.

108. Bright Gold
Literature on Sel-Rex Bright Gold, said to provide good conductivity and resistance to wear and abrasion. Sel-Rex Corp., Dept. PF-11, Nutley 10, N. J.

109. Paint Hose
Information on a paint hose made to withstand solvents commonly used in paints. DeVilbiss Co., Toledo 1, Ohio.

110. Cut Electroplating Costs
Booklet entitled "9 Ways to Cut Electroplating Costs" includes new and old tricks-of-the-trade. Metal Industries Div., The Diversey Corp., 1820 Roscoe St., Chicago 13, Ill.

111. Strippers
Data on paint strippers formulated to do tough jobs—such as stripping epoxy-based finishes. The DuBois Co., Inc., 1120 W. Front St., Cincinnati 3, Ohio.

112. Check List
"Enthone Check List" describes literature available covering more than 60 products and processes for electroplating and metal finishing. Enthone, Inc., 442 Elm St., New Haven 11, Conn.

113. Blast Abrasive
Data on Exolon Fastblast, an aluminum oxide blast-cleaning abrasive. Exolon Co., 943 E. Niagara St., Tonawanda, N. Y.

114. Bright Nickel
Literature on Harshaw Nubrite, a bright nickel plating solution that is said to be simple to operate and control; be highly receptive to chrome; plate bright over a wide range; and have high tolerance to impurities. The Harshaw Chemical Co., 1945 E. 97th St., Cleveland 6, Ohio.

115. Barrel Finishing Equipment
Catalog describes complete line of barrel finishing equipment as well as tumbling media: balls, cones, diagonals, pins, etc. Abbott Ball Co., 1064 New Britain Ave., Hartford 10, Conn.

116. Automatic Polishing Machinery
Literature on automatic polishing and buffing machines: straight lines, continuous rotary, rectangular, others. Acme Manufacturing Co., 1400 E. Nine Mile Rd., Detroit 20, Mich.

117. Chromate Conversion Coatings
Technical data file gives complete information on Iridite chromate conversion coatings. Allied Research Products, Inc., 4004-06 E. Monument St., Baltimore 5, Md.

118. Solution Filters
Catalog describes "the ultimate in filtration." Alsop Engineering Corp., 1211 Keen St., Millidale, Conn.

119. Tank Linings
Complete information on Amer-Plate PVC Tank Linings, which will adhere directly to concrete, without metal interlining; withstand wide range of corrosives; withstand relatively high temperatures. Amercoat Corp., Dept. EK, 4809 Firestone Blvd., South Gate, Calif.

120. Phosphate Coatings
Bulletin 1424 describes the various types of ACP Alodine, gives information that helps to select the best one for a particular application. American Chemical Paint Co., Ambler 14, Pa.

121. Copper Anodes
Literature describes the advantages of using OFHC Copper Anodes. American Metal Co., Ltd., 61 Broadway, New York 6, N. Y.

122. Aluminum Cleaner
A non-sludging, etch-type cleaning compound suitable for all aluminum alloys is described in Technical Data Sheet No. 51, a two-page usage and instruction sheet. Called Metex S-412, the cleaner is a dry powder used in solution. Varying depths of etch, from a light satin finish to deep stock removal, may be produced quickly. By varying temperature, time in solution, and concentration, the attack on metal is easily controlled. The surface finish of the treated metal is always uniform and fine grained. MacDermid Incorporated, Waterbury, Connecticut.

123. Spray Booth Coatings
Information on spray booth coatings formulated for general duty or for special requirements, such as fire resistance, low viscosity, etc. Better Finishes & Coatings, Inc., 268 Doremus Ave., Newark 5, N. J.

124. Spray Painting Equipment
Catalog 956 describes complete line of spray painting equipment, including spray guns, air compressors, pumps, booths, automatic equipment, and many other pieces of painting equipment. Binks Manufacturing Co., 3118-40 Carroll Ave., Chicago 12, Ill.

125. Degreasing Machines
Information on degreasing equipment with patented features: anti-diffusion chamber on conveyorized machines; solvent cooler that helps to ensure complete separation of water and solvent. G. S. Blakeslee & Co., 1844 S. Laramie Ave., Chicago 50, Ill.

126. Vacuum Metalizing Coatings
Bulletin describes company's activities in developing special coatings for use prior to and after vacuum metalizing. Red Spot Paint & Varnish Co., P. O. Box 418, Evansville 8, Indiana.

127. Silver Anodes
Information on shaped, extruded silver anodes, including data on the APW Extrusion Process, which is said to assure small, uniform grain size, controlled between definite limits. American Platinum Works, 231 New Jersey Railroad Ave., Newark 5, N. J.

128. Multiple-Color Flow Coat System
Information on a multiple-color flow coat system that provides color change in approximately five minutes. Burdett Manufacturing Co., 4916 S. Monitor Ave., Chicago 38, Ill.

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129. Polishing Machines
Data on polishing machines designed to be used for finishing sheets, plates, extrusions, rods, tubing, auto trim and other odd-shaped pieces. Central Machine Works, 74 Commercial St., Worcester 8, Mass.

130. Conveyor Systems
Planning folder gives complete details on, illustrations of Chainveyor overhead conveyors. Chainveyor Corp., 5618 E. Washington Blvd., Los Angeles, Calif.

131. Cleaning Machinery
Information on conveyorized cleaning machinery. Cincinnati Cleaning & Finishing Mchry. Co., 2008 Hageman St., Cincinnati 41, Ohio.

132. Cleaner
Information on Cowles NS Cleaner. Cowles Chemical Co., 7016 Euclid Ave., Cleveland 3, Ohio.

133. Phosphate Coatings
Information on Detrex Paintbond: phosphates for cold extrusions, zinc-iron phosphates, iron phosphates. Detrex Chemical Industries, Inc., Dept. A-802, Box 501, Detroit 32, Mich.

134. Tumbling Equipment
Catalog describes various types and sizes of tumbling barrels. The Henderson Bros. Co., 134 S. Leonard St., Waterbury, Conn.

135. Polishing and Grinding Machines
Literature describes abrasive belt polishing machines built for finishing flat surfaces. Hill Acme Co., 1201 W. 65th St., Cleveland 2, Ohio.

136. Tubular Filters
Bulletin 123-1155 describes and illustrates tubular filters of various sizes. Industrial Filter & Pump Mfg. Co., 5904 Ogden Ave., Chicago 50, Ill.

137. Spray Booth Filters
Information on filtering the overspray from paint spray booth water curtains. Industrial Filtration Co., 166 Industrial Ave., Lebanon, Ind.

138. Industrial Ovens
"Ovens for Industry" catalog describes various types and sizes of industrial ovens. Kirk & Blum Mfg. Co., 3116 Forrer St., Cincinnati 9, Ohio.

139. Primer
Information on the advantages of Napry Red Primer. Lowe Bros. Co., 424 E. Third St., Dayton 2, Ohio.

140. Cleaning Methods
Handbook of production-line cleaning methods. Magnus Chemical Co., Inc., 208 South Ave., Garwood, N. J.

141. Pearlescent Finish
Data on Nacromer YNC, a material that can be added to standard paint finishes to produce a pearlescent effect. Mearl Corporation, 124 E. 40th St., New York 16, N. Y.

142. Rack Coating
Information on Unichrome Coating 218X, formulated to withstand cleaning and plating cycles, even vapor degreasing cycles. Metal & Thermit Corporation, Rahway 6, N. J.

143. Plastisol
Data on Miccrosol coatings for tanks and other coating jobs where chemical and abrasion resistance are desirable characteristics. Michigan Chrome and Chemical Co., 8615 Grinnel Ave., Detroit 13, Mich.

144. Phosphatizing Large Surfaces
Phosteem Bulletin 55-137 describes the Phosteem process for phosphatizing large surfaces such as cabinets, busses, trucks, caskets, etc., by a spraying operation. Neilson Chemical Co., 2302 Gainsboro, Detroit 20, (Ferndale) Mich.

145. Preparing Aluminum for Plating
Information on Alkalume Pre-Plate, a zincate bath for preparing aluminum for plating. Northwest Chemical Co., 9310 Roselawn Ave., Detroit 4, Mich.

146. Isophthalic-Based Paints
Information on the advantages of using paints formulated with isophthalic acid. Oronite Chemical Co., 200 Bush St., San Francisco 20, Calif.

147. Finishing Systems
Bulletin 51C. Sixteen pages of ways to achieve better paint finishes, faster production and smoother handling of metal products. Despatch Oven Co., 619 S. E. Eighth St., Minneapolis 14, Minn.

148. Dust Collectors
Catalog No. 815 includes photographs of typical installations, describes accessories, tells where to use them, what type of machine to use for specific applications. Hammond Machinery Builders, Inc., 1622 Douglas Ave., Kalamazoo, Mich.

149. Spray-Mask Painting Machine
Folder describes Model BS-6M spray mask painting machine. Includes data on operating and construction features. Sepanski and Associates, 902 Clancy Ave., Grand Rapids, Mich.

150. Polishing and Buffing Machines
Photographs and specifications for a complete line of polishing and buffing machines are given in Bulletin C-10. Standard Electrical Tool Co., 2518 River Rd., Cincinnati 4, Ohio.

151. Automatic Barrel Plater
Information on a new automatic barrel plating machine. Belke Manufacturing Co., 947 N. Cicero Ave., Chicago 51, Ill.

152. Rubberized Abrasives
Field application reports on how Cratex "cushioned action" abrasives have helped to cut costs. Cratex Manufacturing Co., 81 Natoma St., San Francisco 5, Calif.

153. Sectional Contact Wheels
Folder tells about the advantageous features of the R-58 Sectional Contact Wheel. Chicago Rubber Co., 651 Market St., Chicago, Ill.

154. Phosphate Coatings
Information on a complete line of phosphate coatings for various applications. Pennsalt Chemicals Corp., 3 Penn Center, Philadelphia 2, Pa.

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By J. A. Patterson

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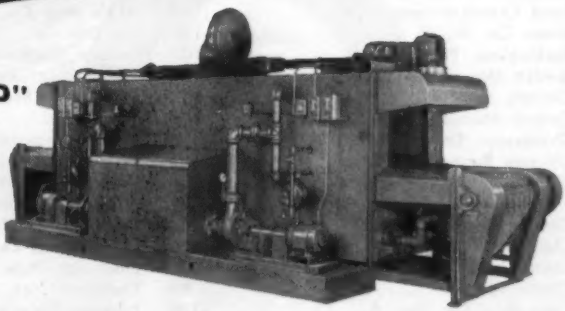

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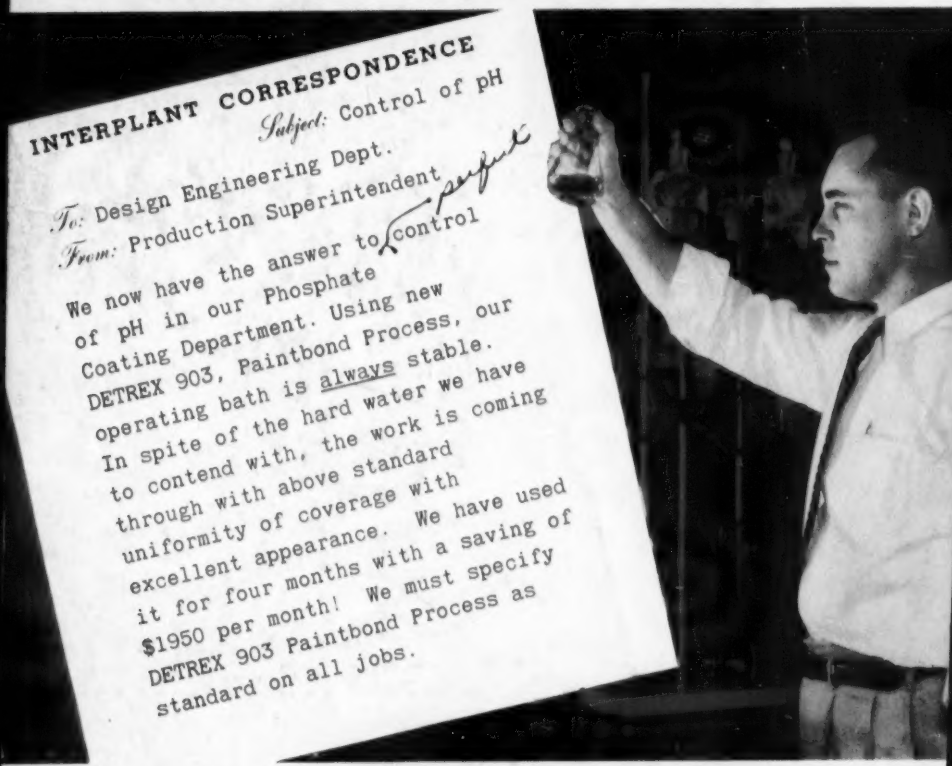
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Subject: Control of pH
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From: Production Superintendent
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